LEARNING MADE EASY

2nd Edition

Orchids

for dummies®
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Explore orchid varieties and decipher their names

Discover ways to fertilize, repot, and propagate orchids

Ensure your orchids bloom and rebloom

Steven A. Frowine
Professional Horticulturist and orchid nerd for more than 50 years

National Gardening Association

Orchids

for dummies®
A Wiley Brand

Orchids

2nd Edition

by Steven A. Frowine

Author of *Gardening Basics For Dummies,* 2nd Edition

and

National Gardening Association

for dummies®
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Orchids For Dummies®, 2nd Edition

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Introduction

Believe it or not, orchids — the most glamorous and spectacular flowering plants in the world, nature's true masterpieces — are easy to grow! You just need to give them what they need. And their requirements aren't difficult to meet — adequate light, humidity, water, and ventilation. Sure, there are other nuances, like fertilizing, repotting, insect and disease control, but none of these are daunting. I've been growing and blooming orchids in my home for almost 40 years — mostly not in a greenhouse, but under lights or on the windowsill.

Helping you achieve success with these glorious plants is my pleasurable mission. If you follow the steps I lay out in this book, you *can* grow orchids that thrive. Everything in this book comes from many years of my own trials and errors — not from theories about what *should* happen or what orchids *might* need. Sure, I'm a professional horticulturist, but probably more importantly, I'm a hands-on, sometimes fanatical, home orchid grower. I don't share with you anything in this book that I haven't tried myself.

Years ago, the methods of orchid culture were well-guarded secrets, hoarded by commercial growers and private estate gardeners. That's not the case here. This is a tell-all book where I reveal the secrets in plain English. So you can now enter this wonderful world of orchids without fear, knowing that you're armed with the information you need to be successful and enjoy one of the most rewarding and fascinating, lifelong hobbies that you'll ever experience — growing orchids.

About This Book

Orchids For Dummies, 2nd Edition, gives you all you need to know to grow, appreciate, and bloom orchids in your home — in a concise, easy-to-read manner. This family of plants is so humongous that you may be overwhelmed by the prospect of choosing and growing one of your own, so I show you only the groups of orchids that are the easier ones to grow. I also make a point of adding lots of illustrations and photos (most of which were taken by me) to show you what I'm talking about.

I want you to feel comfortable with these dazzling plants and get to know them on a personal basis. Then you'll be eager to discover all their mysteries by slowing down your busy life to savor orchids' inimitable flowers, inhale their sensuous perfumes, and observe the unique construction of their roots and leaves.

This new edition includes the following new information:

- **Updates to a slew of orchids' names:** They've undergone major changes.
- **More information on moth orchids:** Moth orchids (the genus called *Phalaenopsis*) continue to be by far the most popular type of orchid with more exciting new varieties.
- **An expanded color insert:** Orchids are such a wonderfully colorful group of plants. The color insert has gone from 8 to 32 pages of vibrant photos.
- **A new chapter on hardy orchids:** Although most people think of orchids as being tropical delights, and most of them are, some orchids can take and actually thrive in cold climates so I include a new chapter about them.
- **Additional details about growing orchids under lights:** You can find more information about different types of lights and my preferences and recommendations.
- **New online resources:** Since the last edition of this book many more online resources are available.

Orchid names are in Latin or Greek, which is a challenge for most people (except your high school Latin teacher) to pronounce and remember. Don't worry about it. Just get into these names gradually. Take some solace in knowing everyone else is struggling with them, too!

With such a complex group of plants come names and jargon to match. This aspect of orchid growing is what scares most people off. Don't let this happen to you! They're just names and words that scientists (more precisely, a type of botanist called a *taxonomist*) have assigned to plants because they had to call them something. Think of orchid names as another language that you can figure out as you go along — with my help. In this book, I simplify the jargon and explain each term in a way that is easy to understand so you can start growing your own orchids with ease.

Foolish Assumptions

In writing this book, I assume a few things about you and your experience with orchids. At least one of the following applies to you:

- You've seen orchid plants in bloom for sale in the garden section of your local home-improvement store or garden center and you've always wanted to give them a try.
- You purchased your first orchid and are wondering, "Now what?!"
- You saw orchids at a flower show and you wonder if you can grow these exquisite flowers in your home.
- You've had some orchids for a few years, but they don't seem to be doing well and you can't get them to bloom again.
- You've grown some other houseplants successfully and are now ready to try orchids.

Icons Used in This Book

I use the following icons throughout the book to point out particularly important information:

TIP

When you see this icon, you can be sure to find information that will make you a more successful orchid grower.

WARNING

This icon points out some common pitfalls you want to steer clear of when growing orchids.

REMEMBER

This icon highlights information worth remembering when you're working with your orchids.

TECHNICAL STUFF

Take it or leave it. This icon points out information that may help you win your next game of Trivial Pursuit or convince you that you could be the next *Jeopardy!* champion, but it's not essential to your understanding the topic at hand.

Beyond This Book

This book is full of tips and other pieces of helpful advice you can use as you start growing and caring for your own orchids. If you want some additional tidbits of wisdom, check out the book's Cheat Sheet at `www.dummies.com`. Just search for "Orchids For Dummies Cheat Sheet."

Where to Go from Here

This book is set up in digestible, stand-alone pieces. Pick out sections that interest you most and read them first. You can bounce around in the book any way you please.

If you already have orchids but are having difficulties growing them, you may want to start out with Part 4. It gives you quick answers to common problems.

Trying to decide which orchid you should start with? Look at Chapters 2 and 15. To get jazzed about orchids, check out the color insert. And if you have an orchid that is in dire need of repotting, skip right to Chapter 7.

If you're not sure where to begin, scan the Table of Contents or index for a topic that piques your interest, flip to the chapter, and start reading.

1

Welcoming Orchids into Your Life

IN THIS PART . . .

Grow orchids to change your life — forever! It has for me and many people. No other plant family offers the number and diversity of breathtaking and intriguing flowers that orchids do.

Enjoying these fabulous plants used to be only for the eyes of royalty or well-heeled aristocrats.

Find out how you can buy an orchid plant in full bloom for less than you would pay for a bouquet of flowers from the florist.

Discover which orchids are less expensive and easy to grow and flower in windowsills and under artificial lights.

Join me in this part as I introduce you to this marvelous plant family. This is going to be a fun journey!

IN THIS CHAPTER

- Exploring this colorful unique group of plants
- Deciding whether orchids are right for you
- Knowing what to do for your orchids each month of the year

Chapter 1

Discovering the World of Orchids

You're about to encounter a marvelous group of plants called orchids. You're in store for an exciting adventure! This is one of the largest plant families on the planet with an estimated 30,000 wild types (species) and many more human-made varieties (known as *hybrids*). No other plants can compete with orchids for their power to seduce and bedazzle the most jaded plant lover with their fantastically beautiful flower colors, shapes, and textures, and heady and sensuous perfumes.

This chapter serves as your launch pad to the diverse world of orchids. They're unparalleled in their marvelous array of flower colors and shapes not to mention their alluring, fragrances. Here I reveal some of the many mysteries of these exotic plants.

Understanding What Makes an Orchid an Orchid

You can easily tell when a rose is rose, but orchids are quite a bit more complex and varied when it comes to their flower shapes and the construction of their leaves, stems, and roots. In Part 3, I give you lots of information on flower, leaf, and stem construction of specific orchids. In this chapter, I talk generalities.

Certainly, the flamboyant colors of modern orchid hybrids are a standout and are the primary reason these plants are so treasured. But there are so many distinct types of orchid flowers, so the question is, “Which one is typical?” There is no correct answer to this question. Many people think of the cattleya-type orchids (see Chapter 11), whereas others may picture moth orchids (see Chapter 10).

To get a better idea how orchid flowers are constructed, look at a typical cattleya flower and compare it to a more ordinary flower, a tulip (see Figure 1-1). Table 1-1 shows some of the major differences between these two flowers.

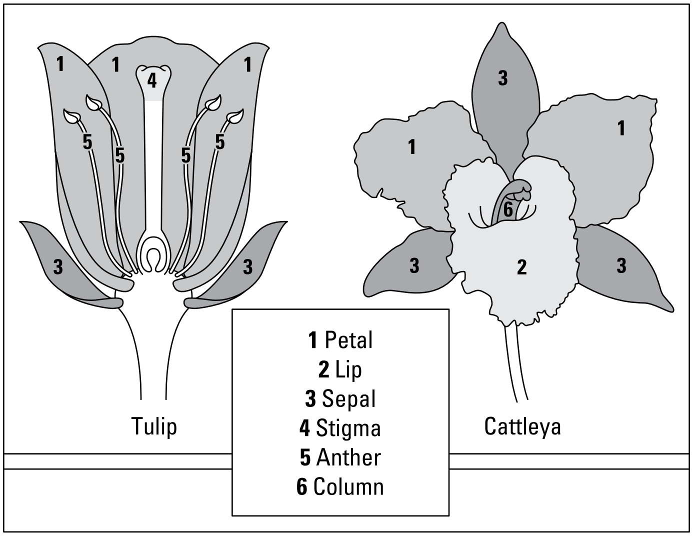

FIGURE 1-1: Comparing a cattleya flower with a tulip flower.

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So, what makes an orchid an orchid? The column. This fused sexual structure located in the middle of the flower is what separates the orchid from all other plants.

TABLE 1-1 Differences between Tulip and Orchid Flowers

Flower Part	Tulip	Orchid
Petals	The most obvious part of the flower and what makes a tulip look like a tulip.	A very prominent part of the flower but comprises only half of the show.
Sepals	Hardly noticeable in the tulip flower, especially after they open.	Very striking in many orchid flowers. Can be as brightly colored as the petals.
Lip or labellum	Not found in the tulip.	Usually a very showy part of the orchid flower. Actually, a modified petal.
Anther and stigma	The two sexual parts of the tulip. The anthers are male reproductive organs, and the stigma is the female part.	These separate organs are not found in the orchid; instead, orchids have a column in which the male and female parts are fused.
Column	Not found in tulip.	Only found in orchids.

Knowing Where Orchids Come From

About 80 percent of orchids are from the tropics in both the New World (mostly Central and South America) and the Old World (Asia and Africa). A smattering of mostly hardy orchids can be found in countries with more temperate climates.

The ones that grow in your home, though, are all tropical or semitropical origin. They mostly hail from areas of high rainfall and humidity and enjoy tropical to above-freezing temperatures during the winter.

Orchids are divided into two major categories based on where they grow:

- **Epiphytes:** They're commonly found clinging to branches of trees. Epiphytes have thick roots (called *aerial roots* because they're frequently suspended in the air), which are covered with a silvery material called *velamen,* which can absorb moisture from the air like a sponge (see Figure 1-2).
- **Semiterrestrials and terrestrials:** They thrive growing on or in the ground. Many of the terrestrial roots are hairy, like those found in the slipper orchid (see Figure 1-3).

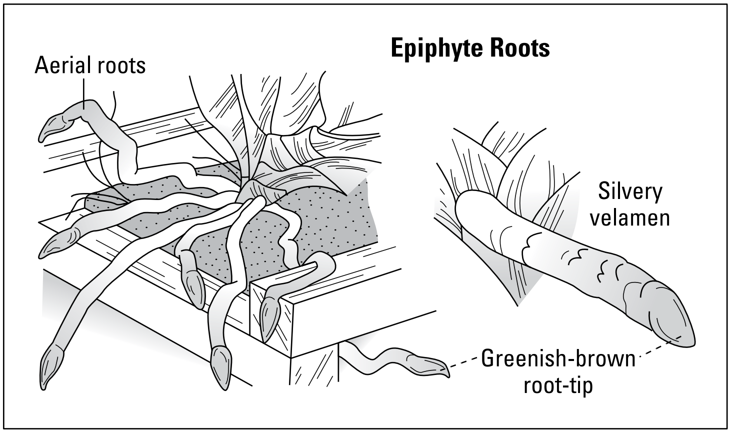
Epiphyte Roots
Aerial roots
Silvery velamen
Greenish-brown root-tip

FIGURE 1-2: Epiphytic orchids have thick roots covered with silver velamen.

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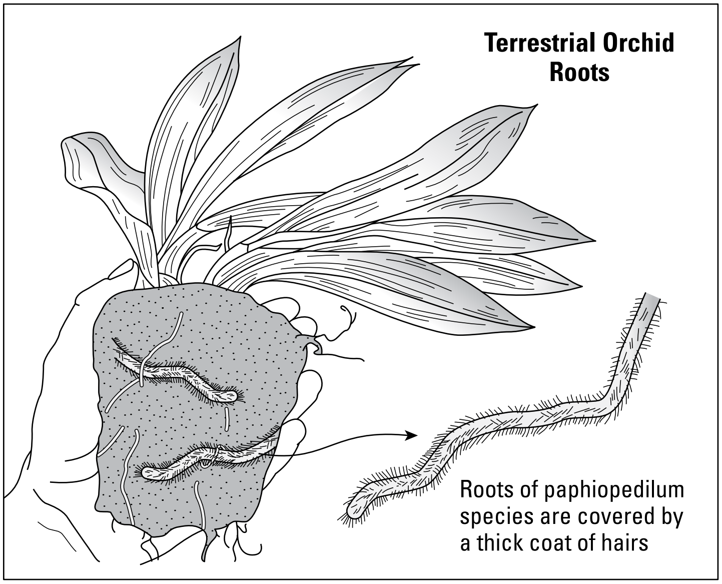
Terrestrial Orchid Roots
Roots of paphiopedilum species are covered by a thick coat of hairs

FIGURE 1-3: Terrestrial and semiterrestrial orchids, like most slipper orchids, frequently have hairy roots.

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Seeing Why You Should Grow Orchids

Growing and studying orchids provide you the ultimate horticultural experience and pleasure. Here are some key reasons to start growing orchids now:

- **Growing orchids is fun!** That's the most important motive.
- **Orchids are easy to grow.** See Chapter 5 for tips on how to be successful.

- **You can start with beginner orchids that any newcomer can be wildly successful with.** See Part 3 for some plants to start you off.
- **Orchids cost less than they ever have, and you can easily select just the right one for you.** See Chapter 2 to make this process a snap.
- **No group of flowering plants comes close to the delicious perfumes that orchids emit.** Pay attention to the Fragrance icon used throughout this book to find the most-fragrant orchids.
- **Orchids are available from big box stores, specialty growers, orchid shows, garden centers, botanical gardens, orchid societies, and mail-order suppliers.** These outlets have large selections, which was unheard of a decade ago. Even better, the orchids are reasonably priced.
- **Because of the huge diversity of orchids, you'll never tire of them.** You'll always find new ones to try and enjoy. Check out the chapters in Part 3 for some of the many possibilities.
- **You'll meet new friends who are as fanatical about these plants as you are.** See Appendix A for lists of orchid societies to join. Their magazines are a marvelous source for information and gorgeous pictures. These are some of the best-quality plant magazines in the world.
- **Orchids don't require an expensive greenhouse to grow.** They'll be happy with a windowsill or artificial lights. See Chapter 5 for the skinny on how to grow these orchids to perfection in your home.
- **They'll beautify your home and life.** See Chapter 4 for some tips on how to enjoy them to the fullest in your home.
- **Orchids can live forever, so as they grow you can divide and multiply them to share with your friends or to trade for other orchids.** See Chapter 8 for more tips on dividing and multiplying your orchids.

Deciding Which Orchids to Bring into Your Home

Choosing an orchid is an exciting, but sometimes confusing, decision! So many types of orchids, so little space. In this book, I make this process easy for you:

- Check out Chapter 2 to walk through some of the steps to take in deciding what orchid will fit in with your home environment and suggestions of where you can scope out and purchase them.

WHAT IS A NOID?!

You may have one and don't even know it. A *NOID* is an orchid that's purchased with no name (thus the word No ID — no identification — is commonly referred to as a NOID.) Usually, it has no name label. You commonly find these orchids at home stores and grocery stores. Does this mean they're in some way inferior? Not really. It just means that you won't know the exact name of the orchid you have. You may be wondering why this orchid doesn't have a name. More than likely it doesn't have a name because this orchid was mass produced and was never given a registered name.

The only real disadvantage of a NOID orchid is that you aren't able to enter it into a judged orchid show because the judges can't be sure of its name or its parentage, which are requirements of entries.

- Consider starting your orchid collection with moth orchids. They're the most foolproof of all. See Chapter 10 for details about these.
- Check out slipper orchids, another easy group. See Chapter 12.
- If you want to try hardy orchids to grow outside, look at Chapter 15.
- When you're ready to expand or you want more choices, check out all the other orchids in Part 3.

Identifying Orchids by Name

One of the most intimidating hurdles that the beginning orchid grower faces is the complex names given to orchids. When you realize what an immense group of plants this is, you'll soon come to realize why most orchids are referred to by their Latin or Greek rather than a common name. Very few orchids even have a common name. In this book, I always use the Latin name, because that's the universally accepted name, and I add a common name when there is one.

I know the Latin names can be a bit daunting, so much so that some folks wished this language had died with the Romans, but alas, it's alive and well in the natural-science world, and it's the standard language used worldwide to name flora and fauna. You'll start to make friends with Latin as its use becomes more familiar and comfortable to you.

Saying the name a little at a time makes it easier to digest. In the following sections, I show you the names, one word at a time, of a species orchid and then a hybrid.

TECHNICAL STUFF

Unfortunately, these names can change as botanists discover that certain orchids were originally incorrectly assigned a name, or they find that orchids they thought were closely related and given names accordingly weren't actually related so they needed new names. Also, botanists from different countries don't completely agree on the name. They follow specific naming guidelines called the Rules of Nomenclature for the International Code of Botanical Nomenclature formulated by the International Botanical Congresses. Also, the *World Checklist of Selected Plant Families* is a standard reference. Talk about confusing and even aggravating! Just when you've finally learned one name for an orchid the name changes. I try to use the most recent name (nomenclature) for orchids, but you can be sure some names are likely to change. In no time you'll become comfortable, or at least less uneasy, as you become more familiar with these names.

Species orchid names

Plants that are sold as they were created by nature, not hybridized by man, are referred to as *species orchids.* They have two names (and possibly three):

- **Genus name:** It comes first and is capitalized.
- **Species name:** It comes second and is lowercase.

  Both names are in Latin or Greek, so they're italicized (which is just the way foreign languages are usually treated).
- **Botanical variety:** You may see a third part to the name, the botanical variety, after the species name. This is a name given to an orchid that varies — it could be a larger flower or one with slightly different coloration — from the standard species. It's preceded by the letters "var." and will be in lowercase and in Latin.

TIP

The genus name is much like your last name and the species name is like your first name. In other words, orchid naming is backward to the way you say your own name. If my name were written as an orchid's is, I would be *Frowine steven.*

Here's an example of the name of a species orchid: *Cattleya walkeriana* var. *nobilior.* Table 1-2 explains the orchid's name.

Hybrid orchid names

Oh, it would be so simple if naming stopped here, but man got mixed up in all this and started developing *hybrids.* Hybrids result from *crossing* two species (taking the pollen from one orchid to use it to mate with another). A marvelous thing happens when two different species of orchids are crossed or mated to each other. Their progeny is usually stronger, easier to grow, and frequently produces larger flowers than either of its parents — which is why hybrids are so desirable and popular.

Here's an example of a hybrid orchid name: *Brassocattleya* Cynthia 'Pink Lady' HCC/AOS. (See the color section for a photograph of this orchid.) Table 1-3 breaks down the name and explains its various parts.

TABLE 1-2 The Components of a Species Orchid Name

Part of Name	Name	Explanation
Genus name	*Cattleya*	The first name of the orchid is the genus and is like your last name. It's always capitalized and in Latin.
Species name	*walkeriana*	The second name of the orchid is the species. It's always in lowercase, italicized, and in Latin.
Botanical variety	var. *nobilior*	Sometimes, a third name appears for a species orchid. This is called a *botanical variety* and means this form of this species has something special about it (for example, flower shape or color) that separates it from the more usual form of the species. This name is in lowercase, italicized, and in Latin or Greek.

TABLE 1-3 The Components of a Hybrid Orchid's Name

Part of Name	Name	Comments
Genus	*Rhyncholaeliocattleya*	This genus combines two different genera — *Rhyncholaelia* and *Cattleya* — to result in the human-made name of *Rhyncholaeliocattleya.* The name is capitalized, in Latin, italicized, and frequently abbreviated *Rlc.*
Species	None	This is a hybrid that has several different species in its parentage, so no single one is listed. When an orchid hybrid comes from just one species, the species name will also be listed, lowercase, in italics, and in Latin.
Grex	Cynthia	All the resulting progeny from this cross are given a name that's known as a *grex.* Think of this as you and all your siblings having a label. The grex is always written in a language other than Latin, is capitalized, and isn't in italics.
Cultivar (cultivated variety)	'Pink Lady'	This is a selection from this grex that was deemed, in some way, superior to the other members of the progeny. This name is always in any language other than Latin, is capitalized, is not italicized, and is in single quotes. There are frequently several or more cultivars in a grex. Think of the cultivar as one of your parents' children. You're all labeled with a grex, but the cultivar is you in particular.
Award Designation	HCC/AOS	Highly Commended Certificate from the American Orchid Society. (See the nearby sidebar for more information on these designations.)

WHY CARE THAT AN ORCHID WAS AWARDED?

Awarded orchids are the crème de la crème of the orchid world. They've been deemed this distinction by trained, discriminating orchid judges. The American Orchid Society, a nonprofit educational organization that is dedicated to the study of orchids, has established the judging criteria. Similar organizations serve the same function in other parts of the world.

At each accredited orchid show, a covey of judges carefully examines orchids that are exceptional. They use Internet connections to check all existing records of the orchids being judged. They look for ones of the same grex or similar parentage to see what has been awarded in the past to serve as a benchmark of excellence. These records will reveal which of their parents have been awarded, what size and number of flowers were on the awarded plants, and so on. They then use the criteria to decide if these specimens are indeed superior to others of this type and whether they're worthy of awards. The three award categories used by the American Orchid Society that you're most likely to encounter are (from highest to lowest):

- **First Class Certificate (FCC):** This is the coveted highest award that only a handful of orchids (10 or 15!) receive every year.
- **Award of Merit (AM):** Usually a few hundred orchids win this distinction every year.
- **Highly Commended Certificate (HCC):** Another few hundred orchids are given this level of award.

  Of course, other countries also have their own award designations, and these award-winning plants are equally exceptional and worth searching out.

Very few orchids make it through this gauntlet. Because of modern cloning techniques (see Chapter 2), you can now obtain these prize winners for your own collection at very reasonable prices. Some types of orchids, like the slippers, are rarely cloned, so in that case, picking out those hybrids with awarded parents is a good idea. ***Remember:*** It takes the same amount of space to grow a high-quality orchid as it does a poor one, so why not grow the best?

Orchid hybridizing can produce plants with quite complex names, especially in some of the exceptionally large groups like the cattleyas (see Chapter 11) and the oncidiums (see Chapter 13). In these chapters, I deal with their names in more detail. Appendix A provides a pronunciation key of many of the orchids I discuss in this book.

You don't have to be an expert in orchid names in order to enjoy and grow orchids. You'll catch onto many other name nuances after you're drawn further into the orchid web. For now, don't worry about them much — they're only names!

Recognizing What Makes an Orchid an Award Winner

Various orchid societies have developed their own systems of deciding when an orchid is a winner.

Much of it's based on comparing the existing champion and of this particular type of orchid to the one being judged. Thank goodness for existing orchid databases complete with pictures and specifications. Does the one being judged have larger flowers or more flowers? Are its flowers better shaped, fuller, brighter, or better marked? There are just some of the primary criteria.

Of course, the truth is, all that really counts is you think your orchid is a winner. One thing that judging rarely takes into consideration is the vigor of the plant. Is it easy to grow and flower? Those qualities are particularly important to me and what good is it if your plant is an award winner if it isn't a robust grower and is a reluctant bloomer.

FEELING THE ORCHID MANIA

Being crazy about orchids isn't new. In fact, this orchid mania, also known as *orchidelirium,* seems to have reached its peak in Victorian times. It was similar in its extreme to Dutch Tulip Mania. During these times, some wealthy folks mostly in England spent vast amounts of money to send plant explorers to all parts of the world in search of new species of orchids that were then brought back to auction houses in London to be purchased for vast sums of money. These explorers risked life and limb to find new treasures. They faced tropical diseases, poor or nonexistent roads, steamy insect-infested jungles, and civil unrest in some of the countries they explored. The explorations were extremely competitive and cutthroat.

The explorers kept the locations where they found the orchids as a guarded secret, and they made very few efforts at leaving any plants behind to reestablish themselves in the wild. In fact, some accounts reported that the explorers burned the grounds where the orchids were originally collected so no one else could collect them. Unfortunately, not much information about growing and transporting orchids was known at that time so many if not most of the orchids died in transit or withered in greenhouses that didn't replicate their native environments. Some species of orchids probably went extinct because of these practices.

Growing Orchids Easy As One, Two, Three

To be successful in growing orchids, just follow these suggestions:

- **Know the environment you have to offer your orchids and match this with the orchids that fit.** See Chapter 5 for more information on your growing environment.
- **If necessary, modify your growing area to help your orchids perform to their best.** Chapter 5 also addresses this.

For the most common questions and problems, check out Part 4.

Beyond choosing the right orchid for your environment, you must pay attention to the time of the year to know what your orchid needs. In the following sections, I give you a rundown of the year, month by month. ***Note:*** You can't be too exact with the timing of this care schedule because the United States is a vast country with climates from the cold north to semitropics. Also, these guidelines are for the Northern Hemisphere. If you live in the Southern Hemisphere, take that into consideration. For example, January in the Northern Hemisphere corresponds to July in the Southern Hemisphere and so on.

January

This is a period of cold, short days and low light, so orchids don't grow much in such times. Fortunately, many moth orchids, slipper orchids, and some other cattleyas and their relatives will be budding up getting ready to show off their splendiferous blooms very soon. Consider the following:

- For orchids such as some of the dendrobiums, cattleya species, and deciduous orchids, like the catasetums, this is a time of rest, so you'll want to reduce your watering.
- Keep the humidity high with good air movement.
- If you're using well water, warm it to room temperature before using it on your orchid plants. Ice-cold water can cause forming buds to drop and may stunt new growth.
- Don't put your orchids too close to the windowpanes or the leaves could be damaged by the cold.
- Apply little fertilizer. The orchids won't need it. In fact, if you apply too much fertilizer at this time, the excess slats in the unused fertilizer can damage orchid roots.

February

This is another dark month, but the days will be getting longer and brighter, which should cause an increase in growth. Keep the following in mind:

- Toward the end of this month, increased light may mean you have to be careful with your orchids that require less light, like the slippers and moth orchids, so they don't get burned.
- More of your orchids will be showing buds and some, especially some of the moth and slipper orchids and some of the oncidiums, should be blooming.
- Don't overcrowd your plants. Make sure they receive as much light as possible.
- Provide good air circulation to prevent disease problems.
- Stake your cymbidiums, which should be spiking now.
- Don't forget to keep your miltonias and miltoniopsis damp.
- If you're growing under lights, take note of when you last changed your bulbs. Fluorescent lamps can lose up to 40 percent of their light output after several months of use. Because new growth is starting on orchids, this is a good time to change the lamps so the plants will receive the most light possible.
- Apply very little fertilizer during this month.

March

Finally, signs of spring with longer and brighter days. Most orchids will respond very favorably to the increased light and warmth of this month. Here are some guidelines for March:

- Be careful that the increased sunlight doesn't heat up your greenhouse or windowsill too much. Apply shading if necessary.
- The increased light and warmth of this month means an acceleration of growth. Sprouting new roots should be more evident.
- This is the beginning of the show for many orchids. Many cattleyas, moth orchids, slipper orchids, and oncidiums will be starting to bloom.
- As the days get brighter and warmer, you can resume your regular fertilizing schedule.
- March and April are prime times to check out orchid shows in your area.

April

In April, many orchids will be in glorious flower. You'll notice increased growth and new roots and foliage as spring is at full steam ahead. You'll be busy tending your orchids. Remember the following:

- You'll probably have to increase the frequency of your watering because of the new plant growth.
- As soon as you see new roots emerging in cattleyas, repot. Do it before the roots grow a few inches (5 cm) long.
- Many other orchids showing new growth can also be repotted at this time.
- Be on the lookout for bugs. The warmer temperatures cause them to hatch.
- Dormant orchids should be showing new growth now so you can resume your regular watering schedule.
- If you didn't apply shading on your greenhouse last month, it may be needed now.
- A gauze curtain may be needed to soften the light for orchids growing in a south window.
- Check out orchid shows in your area.

May

Rapid growth will continue at full this month as days get brighter and longer. May is another prime month for orchid flowering and another active month for you, their caretaker. Here are some tasks that will need your attention:

- More frequent watering and fertilizing is needed.
- If you're in a northern climate, move some plants to a shaded, protected spot outdoors by the end of this month, but be careful not to do this too quickly. Orchids that prefer it warm, like moth orchids, don't appreciate being too chilled at night, not below around 65°F (18°C).
- Increase your ventilation to remove excess hot air and prevent fungal disease spotting on the flowers.
- May is usually an opportune time to repot your orchids because they should be in active growth now. Attend to this right after they've flowered.
- Continue your fertilizing program to strengthen new growth.

June, July, and August

Temperatures are starting to heat up now. Some orchids, like a few of the summer blooming hybrid cattleyas, moth orchids, oncidiums, and slipper orchids, will be in flower. These months aren't usually noted for a lot of orchid flowering, but they're a time when the plants produce many roots and leaves to build up energy for future blooming so pay attention to them in the following ways:

- Be sure your windowsill or greenhouse doesn't get too hot. Consider moving the orchids you have in the south window to the east window, where they'll have reduced light and heat.
- For orchids growing under lights, make sure your growing area gets plenty of ventilation because it could be getting very warm now under the lights. If you have trouble keeping the temperatures low enough, consider summering your orchids outside in a shaded and protected spot. They'll enjoy the vacation.
- This is also a prime time for insect problems. If it gets hot and dry, be on the lookout for mites. If it's wet, slugs and snails will be a plague. Aphids, mealybugs, and scale can show up anytime. If you need to spray, do it in the morning when it is cool and be sure the orchids are well watered before you spray. Check out Chapter 9 for more information to handle bugs.
- The orchids should now be responding to your earlier repotting efforts with new root growth.
- Repot miltonias. ***Remember:*** They like to be pot-bound, so don't put them in too large of a pot. This is true for most orchids. If they're overpotted (the pot being larger that desired), there's a tendency for the potting material not to dry adequately between watering, which can result in rotted roots.

September

Cool evenings and shorter days are signs of the change of season. Many of the hybrid vandas will be at their blooming peak in September. The cooler nights are beneficial for initiating or setting flower buds for the fall-blooming cattleyas, oncidiums, dendrobiums, angraecums, and moth orchids and slipper orchids. Here are a few fall tasks:

- If you're in a cold climate, bring indoors any plants that have been summering outside. Before doing so, check them closely for pests. If spraying is called for, doing so is much easier and safer to do while the plants are outdoors.

- Start cutting back on the frequency of watering deciduous orchids like catasetums (which will have yellowing foliage at this time of year).
- Remove shade on the greenhouse in most parts of the Northern Hemisphere.
- Move orchids that require a lot of light from the east window back to the southern exposure.

October

Some cattleya species and their relatives and hybrids will be in bloom now. So will some moth orchid species and hybrids and oncidiums. Do the following for your orchids, no matter if they're in a greenhouse, under lights, or on the windowsill:

- As days continue to shorten and the angle of light gets lower in the sky, position the orchids in your windowsill and greenhouse so that they capture the most light.
- Be sure your glass or glazing surface is clean. This can make a real difference in light transmission.
- Growth will start to slow on many orchids from lower temperatures and light, so reduce watering and fertilizing accordingly.
- Get ready for winter. Insulate your greenhouse. Get a standby emergency propane heater.

November and December

Flowering spikes will be showing up on some moth orchids, slippers, and oncidiums. Some of the nobile-type dendrobiums will be starting to show buds. Low light, short days, and cold temperatures of these two months bring most orchid growth to a stop or at least a crawl. You'll see more growth on plants grown under lights than in a greenhouse or on a windowsill because of the additional light that can be provided. Here are tasks to complete:

- For the Northern Hemisphere and other cold parts of the world, November is the last month to safely purchase mail-order plants before it gets so cold that there will be a higher risk chance for freeze damage in transit. Visit orchid nurseries to pick out holiday presents for your orchid-growing friends (or yourself!).

- Put orchids that require more light, like vandas, in a bright window, close to the lights, or high in the greenhouse to expose them to as much light as possible.
- Water in the early part of the day to ensure that no standing moisture is on the leaves overnight. In cold, damp weather, especially, such moisture can cause disease outbreaks.

DOING YOUR PART TO SAVE ORCHIDS

Many orchids are endangered in their natural habitat. Overcollection and destruction of habitats have been the primary culprits. To save orchids, some international regulations prohibit the exportation or importation of orchids collected in the wild from their native countries. Various countries are also creating preserves to protect these unique plants.

So, what can you do to help? You can do the following:

- Don't ever collect wild orchids whether it be in your own county or on a vacation. If you do, you're contributing to the problem and could be facing severe fines (even jail time!) when you try to bring the foreign-collected orchids into your country.
- Only buy your orchids from reputable dealers who grow their plants from seed or by cloning. You'll have much more success with these nursery-grown plants than those collected from the wild because they have established root systems and they're adapted to growing in greenhouses, on windowsills, or under lights.

The practice of selling wild collected plants, at least from tropical and semitropical lands, is exceedingly rare today. For native orchids in North America and other temperate areas this can still be a problem.

IN THIS CHAPTER

- » Finding orchids for sale
- » Deciding which orchid to buy
- » Picking out a healthy orchid
- » Caring for your new arrival

Chapter 2

Choosing the Right Orchid for You

One of the main reasons some people fail with orchids is that they simply choose the wrong ones. Considering that there are thousands of distinct kinds of orchids, you can easily see how people may not know which one to buy. To be successful, you need to pick a dependable supplier, healthy plants, and the type of orchid that fits your growing area.

Selecting an orchid that suits your growing conditions is much more practical than trying to suit your growing conditions to the orchid. In this chapter, I walk you through the important questions to ask yourself and your supplier so you end up with the orchid that will be right in your growing spot.

Figuring Out Where to Shop

Finding orchid suppliers used to be difficult, unless you were lucky enough to live in a very warm area, like Southern California or Florida. Nowadays, because orchids have skyrocketed in popularity, you can find them for sale in myriad places. In the following sections, I fill you in on your supplier options.

Specialist orchid growers or suppliers

An orchid specialist is always my first choice when I'm buying orchids. Reputable suppliers in this category have been selling orchids for many years before it was the chic thing to do. Almost all of them are orchid fanatics whose hobby grew out of control — so they were forced to either stop buying more orchids or start a business. They know *everything* about their plants — where they came from, their attributes, and how to grow them. They almost always have the largest selection and cater to both the beginner and sophisticated, experienced growers. They love to help other people discover the pleasure of growing orchids and are full of helpful information.

The only disadvantage of specialist growers or suppliers is that you may not have one near where you live. Of course, that doesn't have to be a deterrent. It just means you'll need to do some planning and search out these growers so you can take your own orchid-buying safari! I urge you to seek out these dedicated growers. Unfortunately the number of these growers seems to be dwindling because most folks now purchase their orchids through other convenient channels, but these growers are breeding and growing the less known and fascinating orchids. If orchid aficionados like you and I don't patronize these committed folks, we risk losing the diversity of orchids that only they supply and now enjoy.

TIP

The orchid societies in Appendix A give up-to-date orchid suppliers. The American Orchid Society has recently started offering an Orchid Marketplace on its website that allows you to search for orchid suppliers by location, product category, and genus.

Your local garden center

Having a local orchid source is extremely convenient both for buying the plants and for information on growing. Today, garden centers offer more unusual and more interesting plants than ever before — and orchids are among these. The types of orchids they offer varies greatly from one garden center to the next.

TIP

Look for a garden center that specializes in tropical plants and houseplants. Unless the garden center is noted for its orchid offerings, the selection will probably be limited. Search out the types I mention in this book, especially the moth and slipper orchids.

Orchid shows

At orchid shows, you'll find dazzling displays of a broad range of gorgeous orchids. Be prepared to be wowed! Vendors of orchids are a regular feature of orchid shows, so they're a great place to shop. To find an orchid show in your area, check out the various orchid magazines or search their website.

Online orchid suppliers

You can buy a fine selection of orchids without ever leaving your home. Most orchid suppliers have websites, and some of the sites are detailed and informative.

If you already know what types of orchids you want, you can use a search engine to search for them by type or name. eBay has become quite a useful source for various orchids.

TIP

If you use the Latin name when searching for plants online, not the common name, you'll get many more hits. In other words, instead of searching for "moth orchids," search using its Latin name, *Phalaenopsis.* For a list of English or common names for the Latin names of the orchids check out `https://canadianorchidcongress.ca/Engnames.pdf`.

PURCHASING ORCHIDS ONLINE

Here are some guidelines I use when purchasing orchids online:

- **Check out the vendor's rating.** If it's below the high 90s in satisfaction ratings, check out the vendor's responses to the complaints to make sure the ratings are reasonable. Sometimes customers can be unrealistic in their demands.
- **Examine the picture of the plant being offered.** You should see a picture of the *exact* plant being offered, not a picture of a group of plants. You need to know if this picture isn't just representational of what you might see when the plant flowers but an exact picture of the flower your plant will display. The offspring of seed-grown orchids vary dramatically so you should be aware of that.
- **Look closely at the plant's foliage.** Does it show discolored spots on the leaves or holes in the leaves that may indicate disease or insect damage. Is the foliage floppy and weak, which may show that it's poorly grown?
- **Make sure the vendor accepts returns.** Ask the vendor whether they accept a returned plant if the one you receive is in poor condition or if it isn't the plant you ordered.

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- **Check out the cost and speed of the shipping method.** In general, you don't want your plants to transit for more than a few days.
- **Try to have your plant shipped to you on a Monday.** That way you don't run the risk of the plant being held at the shippers over a weekend if the shipment somehow gets delayed.
- **Order when the weather is mild with daytime temperatures above freezing.** If that's not possible, make sure the shipper includes a heat pack with your shipment and guarantees live delivery. Also, avoid extremely hot times.

Home centers and discount stores

Because orchids have had such a meteoric rise in popularity, home centers and discount stores now frequently stock a limited selection of them. The good news: They usually carry the orchids that are easy to grow. The bad news: Getting information at these stores is difficult. But if you're shopping for your first, inexpensive orchid, and if you don't have easy access to a garden center or orchid grower, these are good places to start.

TIP

When shopping for plants at home centers and discount stores, find out what day of the week their weekly shipments come in. That's the day you want to be there to get the best quality and selection.

Considering Your Environment

When you go to shop for orchids, you can very easily get carried away. The excitement of the moment can completely win over rational plant selection. Few beginning orchid growers take the time to consider their environment *before* they buy. Unfortunately, if you don't think this through before you shop, you may end up bringing home a gorgeous orchid that's completely wrong for you.

TIP

If possible, always choose an orchid that comes close to fitting your growing area. Even though in Part 2 of this book I give you pointers on how to modify your growing area to make it more suitable for orchid growth, you can only modify your environment so much. For instance, an orchid that is commonly found growing in full sun in Hawaii probably won't take well to a windowsill during the winter in low-light areas like New England. And an orchid from the cloud forest that is drenched with almost constant rainfall and extremely high humidity probably won't be happy and bloom in the hot dry air of Arizona.

In the following sections, I help you assess your environment so you can be confident that you'll pick out a stunning orchid that is right for you and that will thrive where you live.

Taking temperature readings

Before you bring home an orchid, you need to consider the average daytime and nighttime temperatures in summer and winter where you live.

TIP

To determine high and low temperatures indoors get a maximum/minimum thermometer that records this information and place it in your growing area. A broad selection of temperature and weather recording instruments are available from home stores, garden centers, or online. I find that a maximum-minimum thermometer (see Figure 2-1) is especially useful to determine your minimum and maximum temperatures for day and night. They're available in digital or analog.

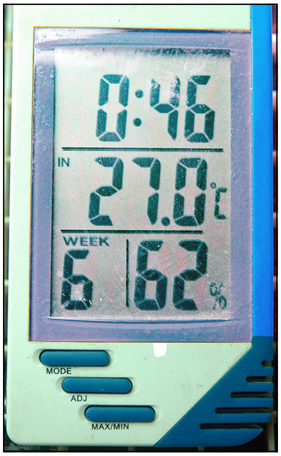

FIGURE 2-1: Maximum-minimum thermometer.

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For an idea of what your minimum temperatures are outdoors where you live, check out the USDA hardiness map online at `https://planthardiness.ars.usda.gov/pages/view-maps`. If you're a weather geek like I am, you can use a recording weather station that reads and records the maximum and minimum temperature, humidity, wind speed, rainfall, and barometric pressure every hour and stores this information so it can be charted. Mine has remote sensors and a wireless connection to my computer.

When you've determined the average summer and winter temperatures in your area, turn to Table 2-1, which lists some of the most common types of orchids by temperature requirements. Notice that some orchids are adaptable enough to fit into more than one temperature range. This information is merely a guideline; if you're off by a few degrees, especially the high degrees during the day during the summer, don't worry about it. Orchids are adaptable.

TABLE 2-1

Orchid Temperature Preferences

Temperature (Nighttime Minimum)	Genus
Cool (45°F–55°F/7.2°C–12.8°C)	*Cymbidium* *Dendrobium* *Odontoglossum*
Cool (45°F–55°F/7.2°C–12.8°C) to Intermediate (55°F–60°F/12.8°C–15.6°C)	*Cymbidium* *Dendrobium* *Encyclia* *Masdevallia* *Miltoniopsis* *Zygopetalum*
Intermediate (55°F–60°F/12.8°C–15.6°C)	*Aerangis* *Cattleya* and hybrids *Cymbidium* *Dendrobium* *Encyclia* *Epidendrum* *Laelia* *Maxillaria* *Miltonia* Oncidium *Paphiopedilum* *Phragmipedium* *Vanda* *Zygopetalum*

Temperature (Nighttime Minimum)	Genus
Intermediate (55°F–60°F/12.8°C–15.6°C) to Warm (65°F/18.3°C or higher)	*Aerangis*
	Amesiella
	Angraecum
	Brassavola
	Cattleya
	Dendrobium
	Encyclia
	Epidendrum
	Neofinetia
	Neostylis
	Oncidium
	Rhynchostylis
	Vanda
	Vascostylis
Warm (65°F/18.3°C or higher)	*Angraecum*
	Phalaenopsis
	Vanda

WARNING

When orchid publications refer to *temperature preferences*, they almost always mean the evening temperature. The daytime temperature is usually about 15°F (9.5°C) higher than the evening temperature.

Measuring your light intensity

Just as important as temperature is the amount of light your orchid will get. Orchids that thrive in high light need several hours of direct sunlight (preferably in the morning to early afternoon), or bright artificial light whereas those that thrive in lower light will perform with less direct and more diffused light in a windowsill or under less intense lights.

Will you be growing the plants under artificial lights? Most light setups consist of multiple florescent high-output lamps and LEDs, and they can provide adequate illumination to most orchids. High-intensity-discharge lamps are capable of much more light output but can be expensive to operate and generate quite a bit of heat. For most folks the best option is going to be LED or various fluorescent bulb units. For much more details about lighting, see Chapter 5.

TIP

How bright is your light? Figure 2-2 illustrates a simple yet effective and reasonably accurate method for determining the intensity of your light.

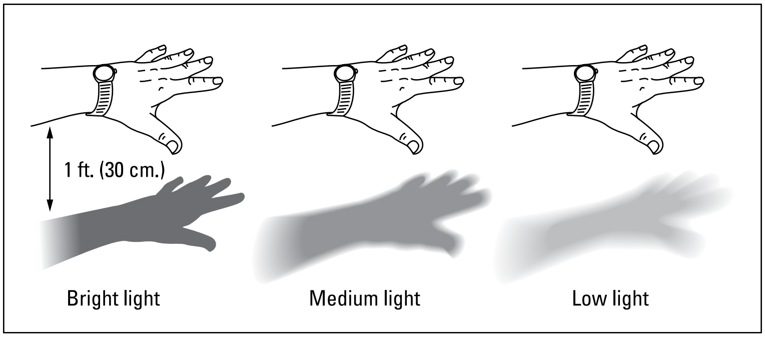

FIGURE 2-2: The shadow test is a simple and reasonably accurate way to measure light intensity.

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After you determine your light levels, turn to the following sections, which list orchids by the amount of light they need. Remember to keep in mind temperature (see the preceding section).

A more exact way to measure light is to purchase a handheld light meter (see Figure 2-3). You can purchase several modestly priced models, including free apps for your phone. I prefer the handheld models because they're so easy to use.

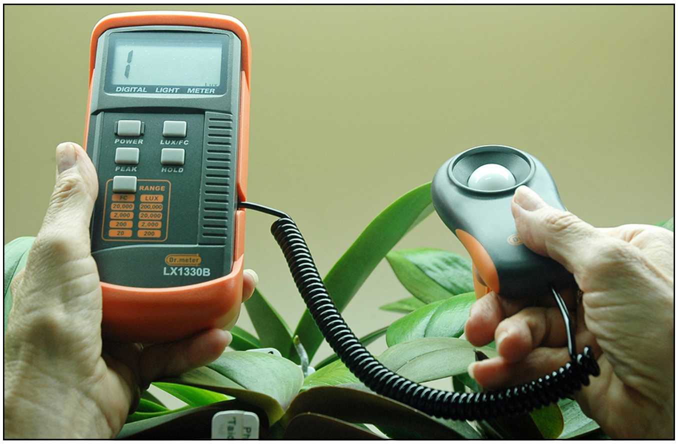

FIGURE 2-3: An example of a handheld light meter.

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The most common measure of light intensity is *footcandles*, which is equivalent to the light emitted by one candle one foot away. This is an old English measure that is still used today and what most light meters read.

Professional and very serious light gardeners use other more exact light measurements but, frankly, in most cases for home growers you don't need to use them.

Bright light (5000 to 6000 footcandles)

The following orchids require a bright greenhouse, a very bright south-facing window, or four or more high-intensity fluorescent lamps, large banks of LEDs, or metal halide lamps (see Chapter 5):

- *Angraecum*
- Some varieties of *Cymbidium*
- Some varieties of *Dendrobium*
- *Vanda*

Medium light (2500 to 3000 footcandles)

The following orchids need a shaded greenhouse, a large east-facing window during the spring, summer, and early fall window or a four-tube florescent light fixture or LEDs of the same light output: (In the winter during shorter days and lower light the greenhouse needs to have some shade material removed, and plants can be moved to a brighter south window, or you can continue growing them under lights.)

- *Amesiella*
- *Ascocenda*
- *Ascocentrum*
- *Ascofinetia*
- *Brassavola*
- *Brassia*
- *Cattleya* and hybrids
- Some varieties of *Cymbidium*
- Some varieties *of Dendrobium*
- *Epidendrum*

- *Laelia*
- *Leptotes*
- *Masdevallia*
- *Miltonia*
- *Miltoniopsis*
- *Neofinetia*
- *Neostylis*
- *Odontoglossum*
- *Oncidium*
- *Paphiopedilum* (strap-leaf multiflorals)
- *Phragmipedium*
- *Rhynchostylis*
- *Zygopetalum*

Low light (1500 to 2000 footcandles)

The following orchids do well with a low level of light, easily attainable with two to four fluorescent lights or LEDs with equivalent light intensity or on an east-facing windowsill:

- *Paphiopedilum* (not including strap-leaf multiflorals)
- *Phalaenopsis*
- All orchid seedlings

TIP

Many orchids can be grown at considerably higher light levels that are recommended if they're gradually adapted to this higher light intensity and are in a well-ventilated area. Why would you even try this? Plants grown in higher light intensity tend to grow more compactly and can produce more flowers.

TIP

Be sure to ask the grower about the temperature, light, and humidity requirements of the orchid you're considering. Check out its ultimate size. Then match this information with what you know about your orchid growing area.

Asking yourself these questions

In addition to considering temperature and light, you want to ask yourself the following questions:

- **Does the growing area have moist (humid) air, or is the air very dry?** If it's already humid (50 percent or greater), it's perfect. If not, your orchids will be happier with moister air. See Chapter 5.
- **How much space do you have to grow orchids?** If you have plenty of head room, you can grow some of the taller orchids, like cane dendrobiums and full-size cattleyas. If space is at a premium, search out very compact or miniature growers. Part 3 gives you plenty of choices for plants of all sizes.
- **When do you want your orchids to bloom?** Spring, summer, fall, or winter? In the evening or during the day? Armed with this information, you can pick those orchids that will be in bloom in the season and time of day of your choice.
- **Do you have air circulation in the growing area?** Most homes have adequate air circulation, but if your orchids are going to be located in the basement or some other spot where the air is stagnant, you'll want to consider a fan of some type to provide them with fresh air. See the ventilation section in Chapter 5 for more information.

When you're armed with this information, you'll be better prepared to choose an orchid that will thrive.

Growing Tropical Orchids Outdoors

If you live in an area where you never experience freezing weather, you can enjoy growing your orchids year-round outdoors. Although some orchids can withstand and even prefer sun and can be grown directly in the ground, most of the orchids in this book are ones that prefer at least some shade and are usually grown in pots or on slabs of bark or wood. Hence, building an outdoor structure that has some type of benching and provides a diffused light of about 50 percent shade is a good idea (see Chapter 5).

Such a structure is also a buffer against high winds. Wooden lath or a saran shade cloth can provide the shade. Make sure you have a water faucet close to this structure so you can water the plants by hand or set up an automatic watering system. A water faucet is also handy in a dry hot climate, and you need to install a humidification system.

Knowing What to Look for in an Orchid

After you consider your environment, you’re ready to go shopping. You have an idea of which types of orchids will work best where you’ll be growing them, and now you just need to look at a few things such as the plant’s health and age. I fill you in on these factors in the following sections.

Choosing a healthy plant

Picking out a healthy orchid plant is essential. Even in the best of circumstances, the orchid that you bring home will have to adapt to changes in its environment. A strong, robust plant has a much better chance of surviving this ordeal than a weak plant does.

TIP

Here’s a checklist of things to look for when you select an orchid:

- **Look carefully at the leaves.** They should be stiff, not shriveled or dehydrated. They should also have a healthy green color. Brown or black spots on leaves could mean disease, or they could be harmless; if you find spots, ask the grower about them.
- **Look for any signs of insects.** Most insects hang out on the new young growth, on the flower buds of the plant, or on the undersides of the leaves. Also check under the pot for snails or slugs.
- **Examine the exposed roots on top of the potting material.** The roots should be firm and light colored, not black, soft, and mushy.
- **Watch out for plants infested with oxalis (which looks like clover).** *Oxalis* is an annoying weed that spreads quickly and is difficult to get rid of after it’s established. The only way to totally get rid of it is to remove all of its roots when you repot. It won’t directly harm the orchids, but it can harbor insects and is a cosmetic distraction.

REMEMBER

Make sure the plants are labeled. Labels will be important to you later if you want to look up information on growing your particular type of orchid.

Unfortunately, orchids purchased at home centers or grocery stores aren’t often labeled. You can ask the sales associate if they at least know the common name of the orchid. Otherwise, you can look through this book until you find the orchid that looks something like the one you bought.

PLANT SIZE DESIGNATIONS USUALLY USED IN THE ORCHID TRADE BY MAIL-ORDER VENDORS

Many orchid vendors follow a convention when describing the relative maturity of the plants they're selling. Here's a rough guide to terms most used. As you can expect you'll run into a bit of variation from grower to grower. Here are the size designations you'll encounter:

- **Seedling Size (SS):** The orchid will bloom in two to three years or more depending on the type of orchid.
- **Near Blooming or Flowering Size (NBS or NFS):** The orchid is six months to a year or more from flowering.
- **Blooming/Flowering (BS/FS):** The plant is the right size to flower.
- **In Spike:** The orchid has started the process of flowering.
- **In Bud**: The flower buds have formed but haven't opened.
- **In Flower:** At least some of the flowers have opened.
- **Already flowered:** The orchid has already flowered at least once and is now out of bloom. Buying plants at this size and stage usually means the plant is well-established, which is greatly beneficial. Unfortunately, it can also mean the flower wasn't that great when it flowered, which is why it hasn't sold already. This last issue is more of a concern on seed-grown plants, not clones.

Sometimes vendors also list the pot size and/or the leaf spread. In general, a larger pot size indicates a larger plant, although that's not always so.

As far as risk with shipping damage goes, plants in flower are the most delicate. If you're impatient to see your new orchid in flower (and who isn't?!) but you don't want to risk the flowers being damaged in transit, specify that the plants be sent in low spike or low bud, if available, which means they've just started the process of flowering so are not as vulnerable to the vulgarities of shipping.

Deciding between a blooming plant and a young plant

When you buy a mature, blooming plant, you get to see exactly what the flower of this orchid is like. Because many orchid flowers can last quite a while, you'll be able to enjoy this orchid for weeks after you bring it home. The biggest disadvantage of blooming plants is that they're usually the most expensive, because they're in the highest demand.

Younger plants — ones that are months or even years away from blooming — are much less expensive than their mature counterparts. The joy in choosing these plants is anticipating when they'll bloom and what they may look like.

Choosing seed-grown orchids or orchid clones

Very few orchids sold today have been collected from the wild. Instead, they've been grown from seed. The flower color, flower size, and growth habits of these seed-grown plants vary. Seed-grown plants are generally very reasonably priced.

Cloned orchids, also referred to as *meristemmed* or *mericloned* orchids, are orchids that have been multiplied from single cells, usually from a plant of exceedingly high quality, in a flask, which is a type of laboratory bottle. The result is that they're all identical.

TIP

The advantage of purchasing a cloned orchid is that you can depend on the orchid that you buy being exactly like its parent, which is frequently an award winner. In general, these clones are a bit more expensive than the others, but they're usually worth it.

Selecting orchids with a sweet scent

Only second to the sheer beauty of the orchid flowers is the exquisite scent that some of them possess. No other family of plants that I know of offers such a wide range of delightful and sometimes repugnant fragrances. They can pleasantly surprise you with the appealing perfume of other flowers as well as fruits, candies, and foods (like chocolate and vanilla). Or, they can gross you out with putrid smell of carrion (to attract fly pollinators). In Part 3 I introduce you to a selection of orchids that you may consider.

YOU ALWAYS HAVE ROOM FOR AN ORCHID

If you're short of growing space and still want to try growing an orchid, don't fret. Plenty of dwarf and miniature varieties can easily fit any growing area (see the following figure of an *Ascocentrum garayi,* which takes up very little space). Some are so small you need a magnifying glass to view their flowers! Part 3 discusses some specific ones that are particularly suited to small spaces.

Isolating Your New Orchid after You Bring It Home

Adding new orchids to your plant collection is exciting, but this is also a time for caution. Even though you may have been careful in the selection process, your orchid still may be harboring insect eggs that may hatch, or it may have a disease problem that you didn't notice before.

TIP

So, to be on the safe side, keep your new plant isolated from all your other plants for at least two to three weeks — enough time to see if any insects appear or a disease shows up. If you need to treat your new plant, doing so will be easier when it's separated from your other plants.

To identify pests and their safest treatment, see Chapter 9.

IN THIS CHAPTER

- Knowing which tools you need
- Taking your toolkit to the next level

Chapter 3

Having the Right Tools on Hand

Every hobby has its tools. And just as you need the right saws and sanders if you're building a cabinet, you need the right tools for growing orchids. The number of tools you need depends on how serious you are about orchids and how many of them you must care for. In this chapter, I fill you in on the tools I find most useful.

Focusing on Cutting and Pruning Tools

You'll probably use your cutting and pruning tools more than any others. Orchids always have a leaf that needs to be trimmed or a dead or diseased stem that needs to be cut off. These tools are also used in the repotting process (see Chapter 7). Figure 3-1 shows the kinds of tools covered in the following sections.

Pruners

You'll need different types of pruning tools, depending on the thickness of the plant part you're removing. Add the following pruners to your tools.

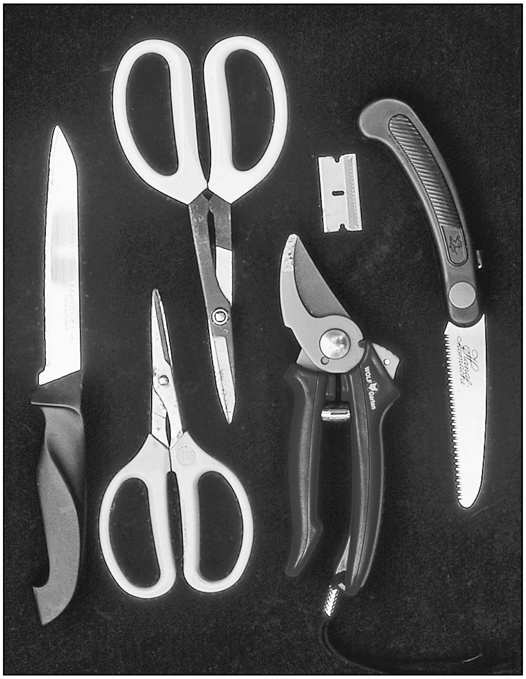

FIGURE 3-1: Cutting tools — from left to right: thin-bladed knife, two pairs of scissors, bypass hand pruners, single-edge razor blade, and folding pruning saw.

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Hand pruners

You'll use hand pruners to cut thick creeping stems. The two types of hand pruners are as follows:

- **Anvil type:** It has a flat cutting blade and can mash the stem tissue (which isn't what you want).
- **Bypass type:** I much prefer the other type of hand pruner, which has a curved blade (refer to Figure 3-1). It makes cleaner and closer cuts.

Scissors

All scissors aren't created equal. I prefer those that are designed for bonsai or flower arranging (like the scissors shown in Figure 3-1). They're extremely sharp and have large, comfortable vinyl hand grips. Some are made of high-carbon steel that hold an edge for a long time. Others are constructed of stainless steel and offer the advantage of not rusting. The smaller scissors are handy for finesse work, like removing spent flower spikes as close as possible to the foliage and trimming delicate leaves. The heavier ones are ideal for cutting thick stems.

Knives and blades

Knives and blades can come in very handy, but choosing the right type is important. Here I guide you through the types available.

Knives

Knives are used most often to circle the inside of the pot to remove the plant when its roots are packed into its container, especially with clay pots. (You can usually cut plastic pots with sharp scissors along the length of the pot to remove the plant.) A very-thin-bladed knife, like the type used for filleting fish (refer to Figure 3-1), is handy because it's easier to maneuver in tight spaces. You can also use scalpels used for dissection craft knives.

Razor blades

To be on the safe side, always use the single-edge type of razor blade (as shown in Figure 3-1). They're perfect for making extremely precise cuts when trimming edges of leaves or cutting apart divisions of plants. Another excellent feature is that they're so inexpensive that you can throw them away after you're done. Disposing of used razor blades also prevents spreading disease to other plants and saves you the hassle of sterilizing them.

Hand pruning saw

Using a hand pruning saw is bringing out the big gun. This tool is most useful to cut extremely thick creeping stems when dividing plants. You can also use them to score the roots when they're very tightly packed together or to cut away a thick plastic pot when you're transplanting or repotting an orchid.

You can find several types of these saws, but the ones that are compact and folding are most handy. A small bladed and fine-toothed type often used for cutting bamboo is especially useful (refer to Figure 3-1).

Considering Potting Tools and Supplies

The tools and supplies in this section make the potting process easier. For specific potting techniques and guidelines, check out Chapter 7.

Potting tools

Potting is a combination of force and finesse. These tools make the process easier and more effective.

Hammers

Regular steel-clawed hammers can be useful for breaking clay pots containing overgrown plants that can't be removed any other way. But for most purposes, a rubber mallet (see Figure 3-2) comes in handier. It's used frequently to pound in stakes or clamps that hold newly transplanted or divided orchids in their pots.

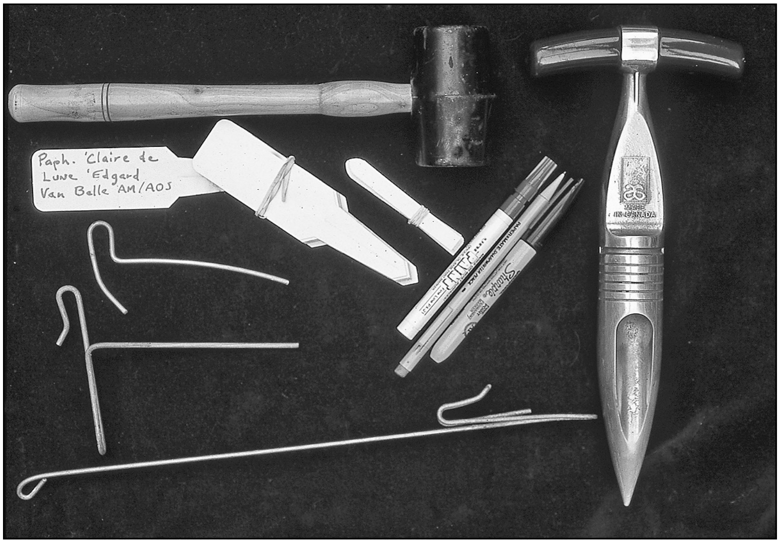

FIGURE 3-2: Potting tools — clockwise from top-left: rubber mallet, dibble, potting clamps, labels, marking pens.

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Dibbles and planting sticks

Getting the potting material to settle in around the roots of the orchids is important because large air spaces can cause the orchid roots to dry out or not form properly. Dibbles (refer to Figure 3-2) and planting sticks are used to push the potting material into these air spaces.

Torches for sterilizing tools

Dirty cutting and potting tools can spread diseases. Preventing disease by sterilizing any tools that come in direct contact with orchid root and leaf tissue is always a good idea. You can use chemical solutions to do this (for instance, a 1:10 ratio of household bleach to water), but chemicals are very corrosive, and some are toxic. A straightforward way to sterilize metal tools is to flame them with a propane or butane torch (see Figure 3-3). Both are available in small handheld sizes.

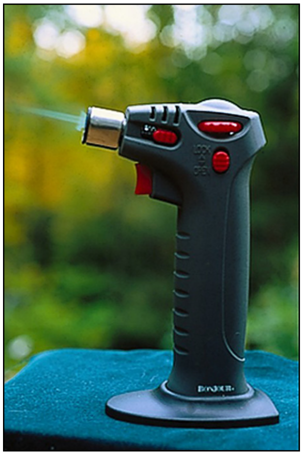

FIGURE 3-3: This compact, lightweight, self-striking butane torch is a breeze to use.

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Potting supplies

The orchid tag that comes with the orchid or the one you make yourself contains especially important information that you want to protect. Knowing the correct name of the orchid is crucial information when you're looking up cultural information. Also, many times the tag includes the orchid's parents' names, which can also provide helpful cultural clues. If you want to enter your orchid in a show, it may be disqualified without proper labeling.

TIP

Keep a legible label in the pots of all your orchids. Maintaining a separate list of your orchids is also a good idea. To make it easier, assign numbers to each of your plants and place this number on the label. This serves as a safety net in case the label is damaged or lost.

Labels

Many types of labels are available, in all varied sizes and colors. Which size or color you choose is a personal choice — the material they're made of is a more important consideration. Table 3-1 lists some pros and cons of each kind of label.

Label markers

Using the right marker can mean the difference between being able to read the name of the orchid three years after you bought it and not. Table 3-2 lists some advantages and disadvantages of each type.

TABLE 3-1 Pros and Cons of Various Types of Labels

Type	Pros	Cons	Comments
Metal (copper)	Lasts many years	More expensive Not as readily available	Good for long-term use Is usually thin enough to mark by indenting with a pencil
Metal (zinc)	Lasts many years	More expensive Not as readily available	Good for long-term use Can be marked on with #2 lead pencil or engraved
Plastic	Inexpensive Available in largest range of sizes and colors	Becomes brittle (especially if exposed to sunlight) and then breaks very easily	Recommended for short-term use only (less than a few years) Will accept a broad range of markers
Vinyl	Doesn't get as brittle as plastic	More expensive than plastic Not as readily available	The best overall choice Will accept a broad range of markers
Wood	Inexpensive Readily available	Rots quickly	Because it lasts such a brief time in damp orchid potting material, it isn't recommended

TABLE 3-2 The Pros and Cons of Various Types of Label Markers

Type	Pros	Cons	Comments
Engraver	Lasts forever Most effective on metal labels, especially zinc	Slow to use Difficult to write small letters More expensive Hard to read after a few years	Handy for long-term labels that are exposed to the elements and chemical sprays
Paint pen	Comes in a variety of colors and thicknesses Won't fade as badly as permanent markers	Takes longer to dry than permanent markers Must be more careful in using them not to smear the paint before it dries	My favorite Available at craft and art-supply stores
Pencil	An old-fashioned, but still very effective marker on plastic and vinyl	Not as easy to read as some other markers Can smear	Use #2 lead for best legibility
Permanent marker	Easy to find and use Available in many colors and thicknesses Makes dark, visible letters	Will bleach out in sun Can also be affected by pesticides	Good to use but after two or three years may have to be traced over to remain legible Some brands have more resistance to sunlight than others

Clips and stakes

Numerous types of stakes and clamps are used to hold the orchid in its pot when it has been transplanted and its roots are inadequate, by themselves, to anchor the plant. Figure 3-2 shows some samples of metal stakes. Bamboo stakes are also available.

Identifying Watering Accessories

Mastering the art of watering is one of the critical keys to success in orchid culture (see Chapter 6). These accessories deliver water, and in some cases fertilizer, gently and effectively. Here I introduce you to tools that can make this job more efficient and effective.

Water breakers

Water breakers are attached to the end of a hose to diffuse the water and prevent it from washing out the orchid potting material (see Figure 3-4). They deliver a large volume of water, but in a very gentle way — and they work well.

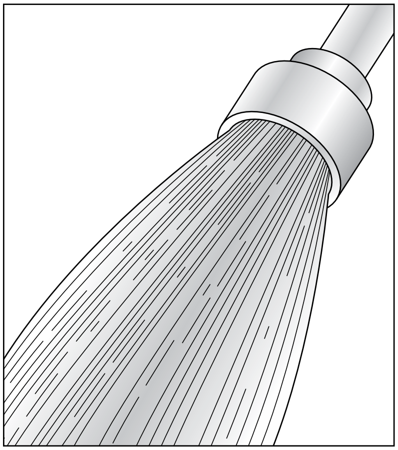

FIGURE 3-4: A common type of water breaker.

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You can find water breakers that deliver different volumes and water patterns such as mist, fine shower, jet, or flood. Some watering heads can be dialed to whichever of these forms you want — very handy.

TIP

You're usually better off choosing the water breaker that delivers the finest steam of water possible. This will be most useful for the broadest range of watering applications.

Water-flow regulators

Water-flow regulators are attached to the hose before the water breaker to regulate the volume of water. The simplest ones are manual on/off valves. The thumb or squeeze valves are easiest to use more precisely and determine the volume of water you want to deliver to your orchids (see Figure 3-5).

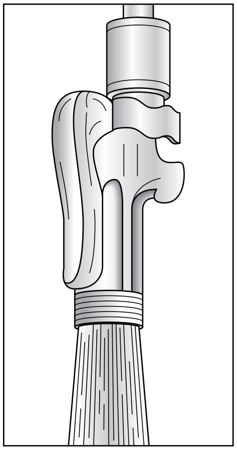

FIGURE 3-5: Thumb valves make watering easier.

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Hoses

Buy the best-quality hose you can find. The better ones will not kink and will last much longer.

Watering cans

Many of the sprinkling or watering cans on the market are close to worthless for using on orchids. They deliver too much water too fast and are awkward to use in tight indoor spaces.

TIP

However, if you want to use one, the best type to use, for most situations, is one that holds ½ to 1 gallon (2 to 4 liters), has a long spout (so you can reach orchids in the back row), and has a removable, water breaker (sometimes called a *rose*) on the end of its spout that delivers a very fine stream of water (see Figure 3-6). The watering can may be made of metal or plastic, but the water breaker should be made of metal, preferably a nonrusting one, like copper.

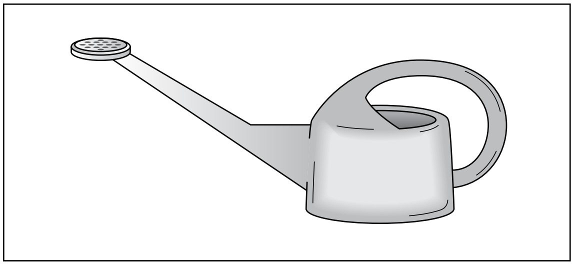

FIGURE 3-6: The most useful watering can is one with a long spout.

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Sprayers and misters

You can use sprayers and misters for misting the orchids to temporarily increase the humidity, to clean the leaves, or for applying pesticides. If you're going to use any chemicals in them, the plastic sprayers are less prone to being affected by these corrosive materials so they're a better choice than metal ones.

One type of hand sprayer that I've found particularly effective for applying insecticides is a teat sprayer because its spray head points up instead of straight forward like standard sprayers. These are used to wash off cow udders (hence, the name), so they're sold at farm-supply stores. But for orchid growers, they serve admirably to apply these chemicals to the undersides of leaves, where the bugs usually hang out.

Fertilizer injectors

Commercial growers use a device called a *fertilizer injector* that injects into the water a small amount of water-soluble fertilizer each time the plant is watered. In this way, the orchids are constantly fed a very diluted amount of fertilizer instead of larger amounts every two weeks or so, as is frequently done. These units tend to be on the expensive side and may be a luxury item, unless you have quite a large number of orchids to fertilize.

A much cheaper way around this is to use a simple siphon mixer. Several brands are on the market, but they all work the same. You attach the siphon mixer to the faucet before the hose. A flexible hollow rubber tube is inserted into a concentrated solution of fertilizer. When the faucet is turned, a suction action created by the water flowing through the hose draws this concentrate through the tubing, so it flows into the water in the hose and is diluted while it's being applied to the orchid plants. See Figure 3-7.

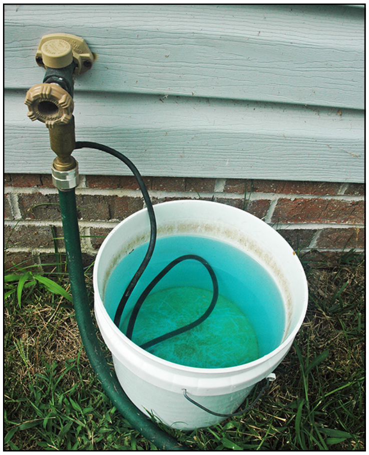

FIGURE 3-7: Simple fertilizer injectors are easy to use and handy if you have quite a few orchids to fertilize.

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TIP

To get the most benefit from a siphon mixer, here are a few tips:

- **Use a completely soluble fertilizer so it won't plug up the unit.** Some granular and thick liquid fertilizers don't dissolve completely so they can jam up the injector.
- **Use a water breaker that functions with a low volume of water.** The water flow coming out the end of the hose will be significantly reduced when the siphon mixer is attached.
- **Be sure the unit you have also has a backflow preventer.** That way, when you turn off the water breaker, but not the faucet, the back pressure won't cause the concentrated fertilizer solution to flush back into your house water or back into your fertilizer concentrate.
- **To be on the safe side, use the siphon mixer only for applying fertilizers, not pesticides**. These mixers aren't precise enough for pesticide applications, and you'll end up wasting the chemicals and possibly doing damage to your plants from an improper dosage of the pesticide.
- **Be careful to dilute the fertilizer to the correct concentration.** These usually inject the fertilizer on a 1:16 fertilizer-to-water ratio, but always read the directions that come with the unit.

Deionization and reverse osmosis units

Deionization and reverse osmosis units are used to purify your well or tap water to reduce or eliminate concentrations of salts that can be harmful to some particularly sensitive orchids. The units aren't cheap and can be cumbersome and bothersome to use. So, before you consider getting one, make sure you need it.

TIP

Here are some things to consider before you buy:

- **If your orchids and other houseplants have been growing well, then don't worry about using a deionization or reverse osmosis unit.** Most households can get by with the water they have.
- **If you've had water problems or just want to be on the safe side, check with your public water provider to see what the average total dissolved solids (TDS) is in your water.** If you have your own well, you'll need to have a test done at a private water lab.
  - If you have 60 parts per million (ppm) or less of TDS and less than 5 ppm of sodium, you're home free. Your water is of decent quality for orchids.
  - If your water tests at 60 to 120 ppm and you have up to 10 ppm of sodium, all except the most sensitive orchids should be okay, but you're on the edge with water quality.
  - If you have readings higher than 120 ppm for TDS or 10 ppm of sodium, you may have more orchid-growing success if you use better-quality water. To do this, you could collect rainwater (you can buy special rain barrels for this purpose that hook up to your downspout) or consider buying a reverse osmosis or deionization unit.

  If you're on the higher end of the TDS level, be particularly careful not to overfertilize.

Looking At Humidifiers, Heaters, and Ventilation Equipment

Your home environment is designed to make you, not necessarily your plants, comfortable. Fortunately, many of your living requirements are the same as the living requirements for most of the orchids in this book. In some cases, though, you'll need to modify your orchids' growing space to better suit them. Here is some equipment that will make your growing space better for your orchids.

Humidifiers

I detail the importance of providing sufficient humidity for better health for both you and your orchids in Chapter 5. To humidify an entire room, there are at least three approaches, which the following sections cover.

Evaporative-pad humidifiers

With these units, fans blow across a moisture-laden pad that sits in a reservoir of water. Evaporative-pad humidifiers are my first choice for home humidification because

- They're reasonably priced and readily available.
- They don't spray the room with droplets of water that can carry mineral deposits and bacteria.
- They circulate air at the same time.
- They only increase the humidity to about 50 to 60 percent (most have an adjustable *humidistat,* which measures humidity). This is a level that is beneficial to plants, but not sufficient to cause moisture damage to the house.
- They require no plumbing and little maintenance — just change the moisture pads one or two times a season.

Cool-mist humidifiers

Cool-mist humidifiers can be effective for small areas, but with constant use, they can cause deposits of minerals on leaves and be a bacteria carrier.

Greenhouse-type foggers or humidifiers

If you have a greenhouse or a large growing area that really needs a lot of humidity, a greenhouse-type fogger or humidifier is for you. However, these units can be pricey. They're plumbed into a constant water supply that is controlled by a float (much like a toilet bowl). The humidity level can be regulated by a separately purchased humidistat.

HAND-MISTING IS A WASTE OF TIME

Frequently you see the suggestion to mist your orchids with a hand-mister to increase humidity. Don't waste your time. The fine water droplets from the mister will evaporate so quickly that they only increase the humidity for a short time. The other disadvantages to this method of humidification is that if you have mineral deposits in your water, this practice will eventually lead to white deposits on your leaves left behind from the evaporating water. Also, if you do this regularly, especially in the evening when the moisture is slower to evaporate, this moisture on the leaves can lead to disease problems. See Chapter 5 for some practical solutions to increasing the humidity for your orchids.

Ventilation

Adequate air circulation is especially important in orchid culture. Fortunately, many convenient and inexpensive pieces of equipment do this job admirably. Here are some of the best choices:

- **Ceiling fans:** These are readily available and do a super job of moving large volumes of air in a figure-8 pattern at a low velocity. Most of them have reversible motors, so they can either be set to pull the cooler air from the floor (usually the summer setting) or push hot air down from the ceiling (usually the winter setting).
- **Oscillating and standard fans:** You can find these in all blade sizes, and most have variable speeds. All will do the job, but you're better off getting one with a larger blade size and running it at low speed. This will move more air but not at as high a velocity, so the plants won't become dehydrated by a strong air current. Also, for oscillating types, splurge on a better-grade model that has metal or heavy-duty gears; otherwise, they'll strip in short order, and you'll then have a stationary fan.
- **Muffin fans:** These are very small, handy fans (3 to 6 inches/8 to 15 cm) that are used to cool electronic equipment like computers. They're great for bringing a gentle, quiet breeze to a small corner of your growing area. You can find them at electronic or computer-supply stores or in catalogs.

For more information on the importance of ventilation and air movement, see Chapter 5.

Heating

If you're like most people, you'll rely on your home heating system to provide most of the heat for your orchids. You can supplement that with small electric heaters or water-resistant heating mats commonly used to start seeds. If you're growing under lights, you can enclose your growing area in plastic film to help retain heat produced by the lights and ballasts.

Thermometers and hygrometers

I have to admit, and my wife will quickly concur, that I'm a nut about temperature and humidity monitoring. I've got remote sensors all over my home that tell me maximum and minimum temperature and humidity levels each day. As I explain in Chapter 5, temperature differentials are important to know about if you're interested in getting your orchids to bloom. Thanks to modern digital thermometers and hygrometers that are simple to use and not expensive, you can keep track of temperature and humidity with little effort.

IN THIS CHAPTER

- Taking care of your orchids
- Staking your orchids when they bloom
- Showing off your orchids in your home
- Making beautiful orchid flower arrangements

Chapter 4

How I Love Thy Orchid: Enjoying the Orchid's Beauty

The main purpose for growing orchids is to enjoy their unmatched beauty in your home. In this chapter, I walk you through tips that will make your experiences with orchids more successful and pleasurable.

Caring for Orchids in Their New Home

Bringing an orchid plant into its new home can be traumatic for both the plant and you! You must get to know each other. Most orchids you buy will have come from a very high-light, high-humidity environment of a commercial greenhouse. You bring them into your home environment, which is usually less bright with lower humidity, so the plant must make some adjustments. Doing this with the least amount of distress is your goal, and in this section, I help you get there.

In Chapter 5, I give you the details of routine orchid care, but here I want to give you some tips that will make the short-term transition easier for both of you.

If the plant is in bloom

TIP

Here are some tips that will make the flowers on your new orchid last longer:

- **Place the plant somewhere in your house that's bright, but where it won't get direct sunlight, except possibly in the morning.** Too much harsh sunlight can bleach out the flowers and scorch the leaves.
- **Keep the plant on the cool side — not above about 75°F (about 24°C).** Flowers stay fresher longer this way.
- **Be sure to keep the plant well watered.** Even though the orchid plant stops growing much when it's in bloom, the leaves and flowers still need water.
- **Don't let any bees or flies in the room where your orchids are blooming.** If the bees or flies pollinate, the flowers will collapse afterward.
- **Don't put the plant close to ripe fruit.** Fruit gives off ethylene gas, which can cause flowers to collapse prematurely.
- **Keep your orchid plants away from strong fumes like paint thinners or other pollutants.** These can cause the blossoms to fade.
- **Don't spray the flowers with water or place the blooming plant in a room that is highly humid with no air movement.** This can cause spotting on the flowers from fungal diseases. Refer to Chapter 3 for more information.

If the plant is not in bloom

Before you add your new, not-yet-blooming orchid to your collection, follow these tips:

- **Look under the leaves and at the younger growth to make sure there are no bugs.** Bugs like to feed on succulent new plant tissue and hide in out-of-the-way places.
- **To be on the safe side, isolate this new plant from your collection for at least three weeks.** This will allow time for hidden insect eggs to hatch out.
- **As a further precaution, spray the plant thoroughly with an insecticidal soap.** Use a paper towel to wipe off the excess spray. Doing so not only kills any soft-bodied insects but it also cleans the leaves.

- **Consider repotting the orchid into your own potting mix.** That way you'll be assured that the potting mix is fresh, and you'll know its watering requirements.

Staking and Grooming Your Blooming Orchids

Orchids deserve to look their best when they're putting on their show. Proper staking and grooming can make a significant difference in how orchid flowers appear. Here are some pointers to do it right.

Figuring out how to stake

Flowers and spikes of orchids can be heavy and, if they aren't staked properly, they'll open at an awkward and disconcerting angle. This can be a distraction, because the most interesting and alluring perspective to view orchids is usually the head-on view.

Staking techniques vary with the type of orchid. The two major types are the spray orchids, like phalaenopsis and oncidiums, or those with single flowers or just a few on one spike, like cattleyas and most paphiopedilums.

For spray-type orchids

Be sure to start this process *before* these orchids are in flower. Doing so ensures that the flowers are oriented correctly when they open. Stick to these simple steps:

1. **As soon as the flower spike is about 12 inches (30 cm) long, insert a vertical bamboo stake (you can get a green one, so it blends in better) close to where the spike originates at the base of the plant (see Figure 4-1).**
2. **As you insert the stake, twist it to work it around roots to minimize damage to them.**
3. **Attach the first tie on the lower part of the spike close to the first *node* (the bump in the flower stem).**

   You can use twist-ties or Velcro. (Don't use sharp string or wire that can damage the stem.) The most popular method is to use plastic spring clips (ones used as hair clips) to attach the flower stem or spike to the plant stake (see Figure 4-2). Be careful not to attach the ties too tightly because this can damage the flower spike.

4. **Attach another tie a few inches (4 cm or so) higher on the flower spike.**
5. **Put additional ties every few inches (4 cm or so) as the flower spike grows.**
6. **Place the last tie a few inches below (4 cm or so) where the first flower buds are forming.**

   This allows the spike to form a natural arch with the first flower open at the highest point and the others gracefully following suit right below that one.

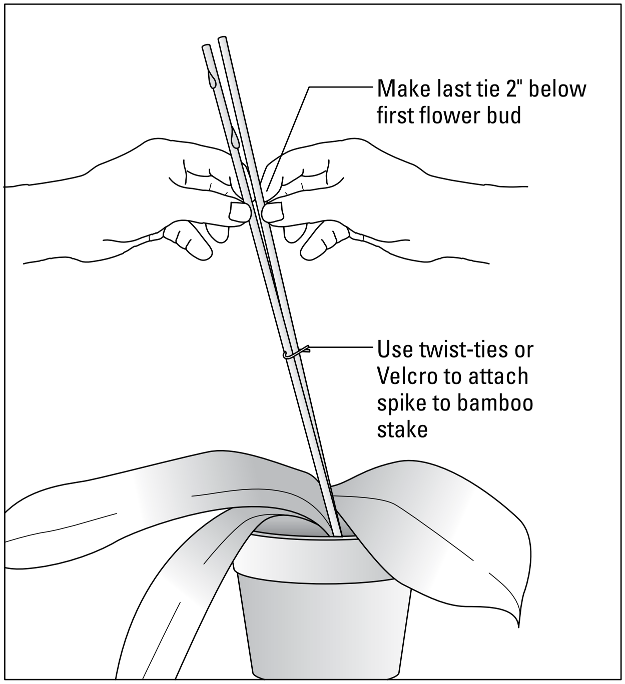
Make last tie 2" below first flower bud
Use twist-ties or Velcro to attach spike to bamboo stake

FIGURE 4-1: Staking flower spikes of spray-type orchids like phalaenopsis or oncidiums.

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WARNING

Flower spikes always grow in the direction of the strongest light. After the flower spike reaches about 12 inches (30 cm) tall and the buds are starting to form, *never* change the plant's orientation to the light source. If you do, the spike will try to reorient itself and you'll end up with a twisted, distorted spike with flowers opening in all directions.

When the flowers are fully open, they'll stay that way, so you can then move the plant anywhere you want.

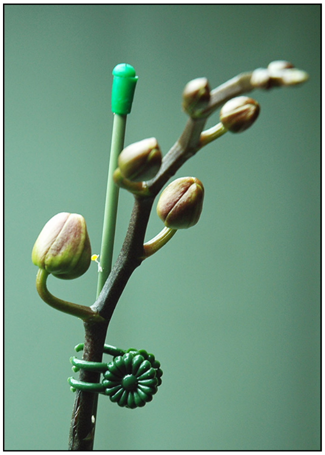

FIGURE 4-2: Plastic plant clips attach the stem of the orchid to its stake, come in assorted sizes and colors, and make staking orchid spikes a cinch.

For single- or few-flowered orchids

Staking these orchids is simpler. When the bud or buds start to swell on the flower spike, insert a vertical bamboo stake close to where the spike originates at the base of the plant.

REMEMBER

Be sure to stake before the flower has opened so that the bud will orient itself to gravity. If the flower spike is at an angle, the flower will adjust itself to open perpendicular to the angle the flower stem is pointing. If you tie the spike up after it has opened, it will keep its original orientation and will look awkward.

TIP

In the last few years, orchid growers have discovered one of the best ways to attach upright flowering stems to bamboo or wood stakes: spring-operated baby hair clips! They're available in all colors, are inexpensive, and frequently are formed in whimsical shapes of butterflies or dragonflies, which fit well with the orchid look. Plus, they work well!

Helping your orchids look their best

After growing the plants for months on the windowsill, under lights, or in a greenhouse, they can look a little rough around the edges. The leaves are usually dusty and/or blemished with chemical deposits, older leaves may be wilted or dead, and some of the tips of the leaves may be brown.

TIP

When the plants are in flower and you want to show them off to their best in your home or get them ready to exhibit in an orchid show, here are a few suggestions to keep in mind:

- **Clean their leaves.** A simple way to polish the leaves is with milk. Dampen a paper towel with milk and rub off the blemishes. Doing so gives an attractive sheen that's harmless to the plant.
- **Carefully remove any dead or severely damaged leaves**. Besides being unsightly, these damaged or dead leaves can be entry places for disease.
- **If you're planning to bring your orchid to a show, be sure that you tape to the pot the name of your orchid plus your own name so that you don't lose the plant.** Also, make a list of what plants you've entered so you have a record.
- **Trim off the brown tips of leaves with very sharp scissors.** The sharper they are, the cleaner the cut and the less leaf-tissue damage will result. When trimming, follow the natural shape of the leaf, as shown in Figure 4-3.

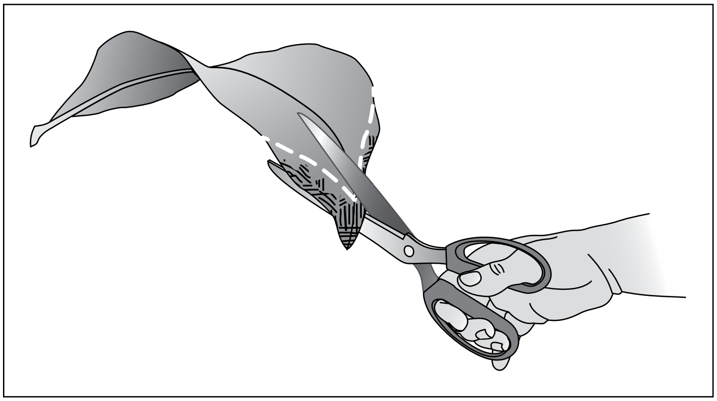

FIGURE 4-3: Trim off brown tips of leaves following the natural curvature of the leaf.

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Displaying orchid plants in your home

TIP

When you're showing off your prized blooming plants in your home, here are a few tips to keep in mind:

- **Be sure to protect your furniture by placing the orchid plant pots on waterproof pads, like cork platters.** This prevents water damage to your wood furniture.
- **If you place your plants on saucers, be sure they're waterproof.** Terra cotta platters are porous, and moisture will seep through and can cause considerable damage to unprotected wood furniture.

- **Place felt or rubber protectors under cachepots, platters, or saucers so your furniture won't be scratched.** Some pots and saucers can have rough surfaces.
- **Place the blooming plants where they get bright light but not hot, late-afternoon light, so the flowers will last longer.** High temperatures cause the flowers to prematurely collapse.
- **If the growing pot is encrusted or ugly, insert it into a larger ornamental pot or basket.** Choose simple green, white, or neutral colors that don't compete with the orchid flowers.
- **Place a layer of sheet moss or Spanish moss on the surface of the pot.** This is a nice touch for covering up the sometimes-unattractive potting material.
- **Display the orchid on a pedestal or higher elevation so you can view it at eye level (see Figure 4-4).** Few orchids are as attractive when they're viewed from above.
- **Think about how you will light your orchids to display them best.** Many people are only able to view their orchids during the work week in the evening, so artificial lighting plays an important part in viewing them. Track lights work great. Use halogen or other bulbs that produce white light or as close to sunlight as possible so the orchid flowers will be rendered accurately. Regular incandescent light produces a yellow/red light that will make reds glow but that really dulls blues and greens.
- **Group orchids with other tropical foliage plants.** These provide an attractive backdrop for the orchid flowers.

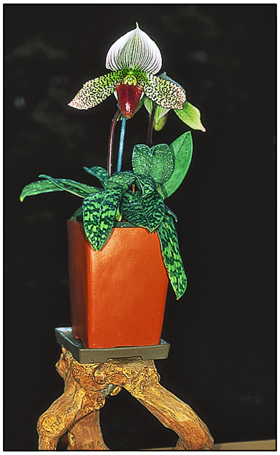

FIGURE 4-4: Placing plants on pedestals and inserting their growing pot inside a more ornamental one draws attention to the best attributes of the orchids — their flowers.

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Arranging orchid flowers

Nothing is more elegant than orchids in a flower arrangement. They've always represented the pinnacle of good taste and sophistication. The key to using them for such purposes is to keep it simple and not to let the elegance of the orchids get overwhelmed by too many other elements.

Understanding the three basic flower-design elements

When it comes to flower arranging, flowers and greens comes in three basic shapes — line, mass, and filler. All of these play a key part in the construction of an attractive flower arrangement:

- **Line flowers** are tall and are used to give your arrangement height and width. Various branched orchids with buds (for example, oncidiums and cymbidiums) are used to create this effect.
- **Mass flowers** give your bouquet weight or mass and are round or full faced. They're usually the focal point of color and interest in a bouquet. Examples are cattleyas and their relatives, as well as paphiopedilums and angraecums.
- **Filler flowers** have stems with many little flowers and usually have fine textured foliage. Examples are miniature oncidiums.

TIP

Here are some tips on how to make simple, yet elegant, arrangements:

- **Line flowers, by themselves, can make a striking arrangement in a tall, cylindrical vase.** Select a vase or container that is in proportion to the flowers. The vase should be about one-half to one-third the size of the total arrangement. For instance, 3-foot-tall spikes of cymbidiums or oncidiums need a vase 12 to 18 inches tall.
- **You can arrange mass flowers by themselves in a low, wide vase or container (see Figure 4-5).** How you want to display the flowers determines your choice of the container you use.
- **A small arrangement of filler flowers by themselves can add a light, elegant touch to any room.** Many of these filler flowers are well suited for drying.
- **Some flowers can be used as more than one element.** For example, phalaenopsis sprays, especially the multifloral types, can be used as line elements, while large single flowers can be used as mass flowers.

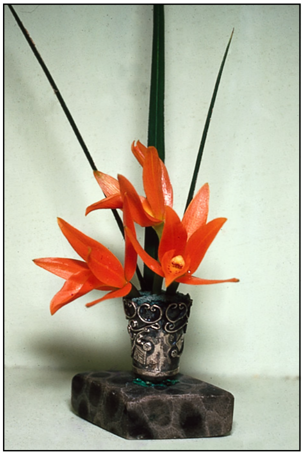

FIGURE 4-5: This miniature arrangement contains only three small cattleya flowers for the mass and three pointed leaves for the line element.

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Supporting the orchid flower stems

Having some method of supporting the stems of orchids in an arrangement, so you can arrange them to face the direction you prefer, is usually a good idea. Here are several methods and materials you can use:

- For a clear vase, add marbles or rocks.
- Crossing the top opening of the vase in a tic-tac-toe pattern of florist's tape works well.
- *Frogs* (pincushions on which the orchid stems are impaled) work well in shallower containers.
- Florist foam is most popular with professional arrangers in low containers because it's easy to use, effective, and retains water well so that the flowers last.

TIP

Don't cut the orchid flowers until they're fully open. Otherwise, they may never have their proper shape or complete color.

Making your orchid arrangement last longer

To make your cut flowers last longer, follow these suggestions:

- **For cymbidiums, wait about ten days to two weeks after they've flowered before cutting; for cattleyas, wait several days.** Cut the orchids only when they've fully opened.

- **Before you put the orchids into a vase, their stems should be recut at an angle *under* water.** To keep them fresh, recut them every several days.
- **Condition the orchids first, before arranging them.** Place their stems in warm (180°F/82°C), fresh water and let them sit somewhere cool (around 50°F/10°C) overnight.
- **Make sure all leaves that will be submerged under water in the vase are removed**. Submerged foliage will rot and pollute the water.
- **To use orchids' short stems (like cattleyas) in taller arrangements, insert the flower stem into *orchid tubes* (water-holding test tubes, available at your local florist) and then tape the tubes to a wood stake for more height**. These tubes give additional length and strength to the flower stem.
- **Add a commercial or homemade solution of floral preservative (see the nearby sidebar) to the warm water containing the flowers.** Change this water and solution every three to four days.
- **Place the arrangement out of the direct rays of sunlight and in a cool room.** Doing so makes the flowers last longer.
- **Double the life of your orchid flowers by placing the arrangement in the refrigerator at night or when you're away from home.** Cooler temperatures prolong the life of the flowers.

Making a corsage

Some people may think that corsages are passe, but I guarantee you if you make one for yourself or your partner for a special occasion, you'll get loads of compliments. Here's a simple one to make that will take just a few minutes to do. Most orchids make stunning and long-lasting corsages. Follow these steps:

1. **Remove the flower you wish to use, retaining about 3 inches (7.6 cm) of the stem.**
2. **Wrap the stem with florist's wire (see Figure 4-6).**

   Two or three passes are sufficient.

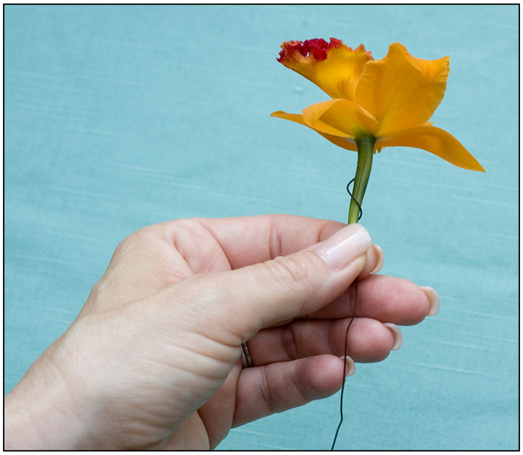

FIGURE 4-6: Wrapping the flower stem with florist's wire.

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3. **Wrap florist's tape around the flower stem (refer to Figure 4-7).**

   Start at the top and work your way down to the base of the stem. Cut the excess wire with wire cutters or utility scissors.

   If you want, you can add a fern frond or some other delicately textured green foliage to the corsage (see Figure 4-8). Hold the frond against the stem and at the back of the flower.

   Fasten the fern foliage to the orchid stem by wrapping them both with another layer of tape.

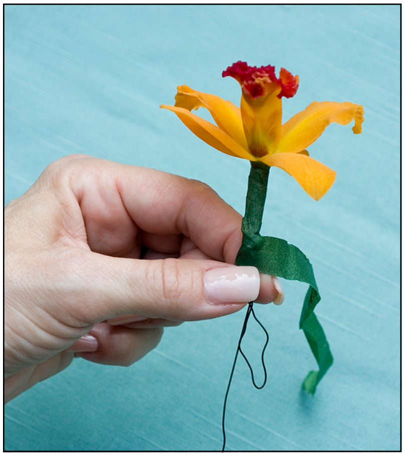

FIGURE 4-7: Wrap the flower stem with florist's tape.

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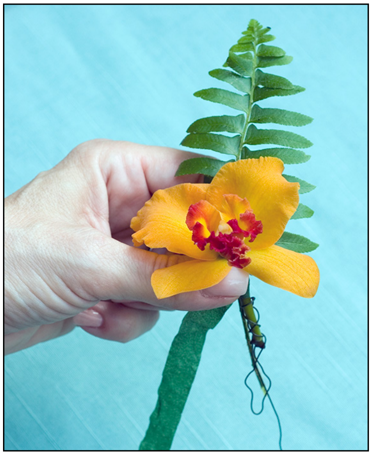

FIGURE 4-8: Add a fern frond to the corsage.

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4. **To add a final addition, you can add a ribbon and florist's pin (see Figure 4-9).**

   Now you're ready to go to the ball!

Place the finished corsage in a sealed rigid plastic container or in a plastic bag in a refrigerator until it's ready to be used.

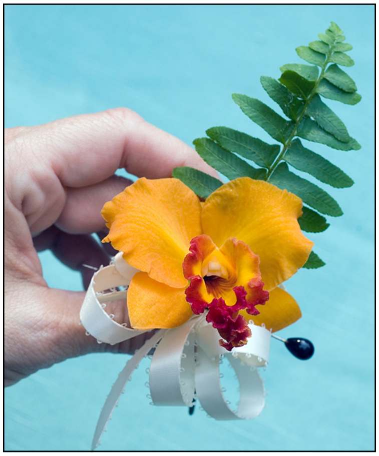

FIGURE 4-9: Add a ribbon and a florist's pin.

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TIP

A SUPER-SIMPLE HOMEMADE ORCHID FLOWER PRESERVATIVE

Here's an easy recipe for making your cut orchids last longer. Combine one 12-ounce can of a lemon-flavored soda drink (like Sprite or 7-Up), an equal quantity of water, and 1 teaspoon of household bleach. The sugar in the soft drink serves as food for the flower, the citric acid lowers the pH (increases the acidity), and the bleach kills the bacteria in the water that can plug up the water-conducting network in the flower stem.

2

The Basics of Orchid Parenthood

IN THIS PART . . .

Find out what environments orchids prefer and explore all you need to know to make your home the perfect growing space for these tropical beauties.

See how to divide and repot your orchids.

Discover how to multiply your orchids and share them with friends or use them for trading for other desired varieties.

Prevent and knock out any diseases and insects that may bother your orchids.

IN THIS CHAPTER

- » Knowing how much light your orchid needs
- » Providing enough humidity
- » Giving your orchids a breath of fresh air
- » Getting the temperature right

Chapter 5

Providing the Right Growing Environment

Orchids aren't difficult to grow. But, like all plants, they have certain needs that must be met so they can perform their best. In this chapter, I detail orchids' most fundamental requirements and the simplest, most effective ways to provide them, based on my 50 years of experience growing orchids on my windowsills, under lights, and in a greenhouse.

Putting a little effort into modifying your growing environment to help your orchids feel at home will pay off in healthy plants that provide plenty of flowers.

Let There Be Light! Recognizing Natural Light Sources

Light is essential for all green plants, including orchids. Light, water, and carbon dioxide are the raw materials plants use to produce their food. Providing enough light is frequently the most challenging requirement for indoor gardeners in areas of the country like the Northeast and the Midwest that experience short days and low light during the winter. Fortunately, plenty of species and hybrids of orchids don't require super-high light intensities and so are more suited to these climates.

If you're blessed with naturally high light — like the kind found in Hawaii, California, and Florida — you can grow both the high- and the low-light-intensity orchids. You just need to use greenhouse shading or light-reducing draperies to satisfy those orchids requiring modest amounts of light.

Here I introduce you to some information on natural light. I try not to get too technical because I'm not a light specialist. Not to worry: You can still be successful in growing orchids without a lot of technical mumbo-jumbo.

Exploring the ins and outs of light

Orchids are traditionally categorized by their light requirements — high, medium, and low. Turn to Chapter 2 for an uncomplicated way to determine the intensity of your light source, called the *shadow test.* Most orchids are in the medium light category. You can easily grow orchids in the low to medium light categories under artificial lights or on bright windowsills. From a practical point of view, the orchids with high light requirements are most successfully grown in bright greenhouses. Here I break down the different places you can grow orchids.

Greenhouses: Your high light source

Greenhouses are the most efficient collectors of natural light. The greenhouse option is the most expensive, but you don't have to own one to grow most of the orchids in this book.

TECHNICAL STUFF

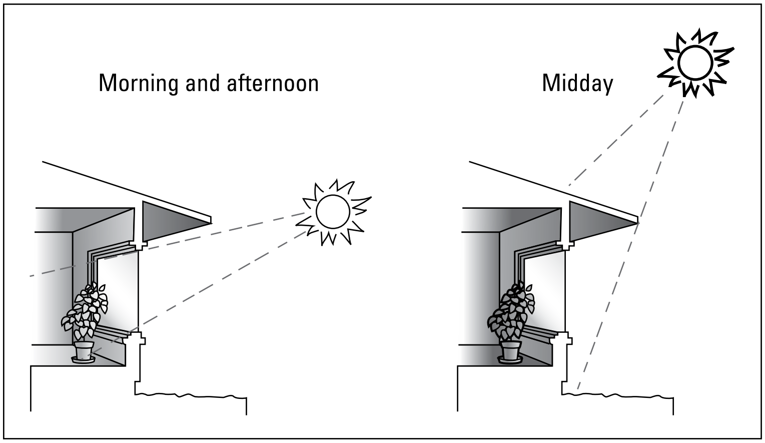
The amount of light penetrating the greenhouse is determined by the glazing material used, its geographic location, how it's sited on the land, and whether it's shaded by surrounding trees or a commercial shading compound or fabric.

Windowsills: Not all are created equal

Windowsills are the most readily available and cost-effective source of light. The amount of light windowsill growing can provide is primarily determined by

- **Whether there is an overhanging roof:** This can make a difference in how much light will reach the plants (see Figure 5-1).

FIGURE 5-1: The extent of the roof overhang has an influence in the amount of light the orchids receive.



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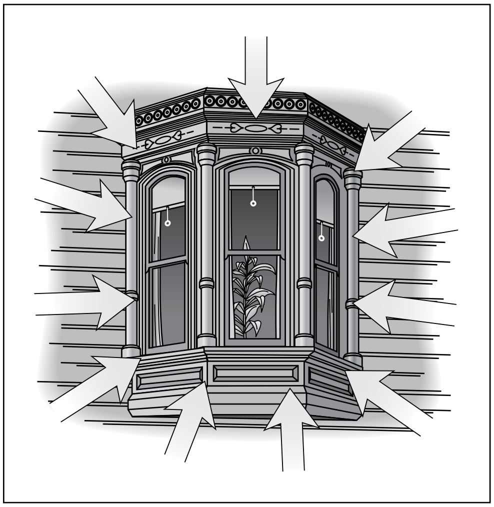
- **The size of the windows:** The larger the window, the more light will be available for your plants. Figure 5-2 shows what I mean.

FIGURE 5-2: Bay windows increase the size of the growing area and the amount of light that the plant receives because light can penetrate from multiple angles.



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- **The direction the windows face:** Whether the windows face north, south, east, or west makes a significant difference in the amount and quality of light the orchids will receive.
  - **South-facing window:** This window is the brightest, so it offers the most possibilities. It's an ideal location for those orchids that demand the strongest light. You can place most of the other less-light-demanding orchids a few feet back from the window, or you can diffuse the light from the window with a sheer curtain. ***Note:*** This exposure can get hot, especially during the summer.
  - **East-facing window:** This window offers morning sunlight, which is bright but not too hot. During the spring, summer, and fall, this is usually an ideal exposure for most orchids in this book, except those that require extremely high light (like vandas). During the short, dark days of winter, many of these same orchids usually prefer a south-facing window.
  - **West-facing window:** This window receives as much light as the east window but because it gets afternoon light, it's much hotter — so this isn't as desirable a location as the east-facing window. If you need to use a west-facing window, make sure your orchids don't dry out too much because of this increased heat.
  - **North-facing window:** A north-facing window simply doesn't provide enough light to sustain the healthy growth of orchids. Use it for low-light plants like ferns.
- **How far the plants are placed from the windows:** Light intensity falls off quickly the farther away the plants are from the windows.
- **The age and condition of the glass:** Tinted and reflective glass can dramatically reduce light intensity, so it's usually not recommended. No matter what kind of glass you have, keep your windows clean, especially during the winter when the light intensity is low, so your orchids will receive as much light as possible.
- **The time of the year:** During the winter, the sun is lower in the sky and the day length is shorter. The opposite is true during the summer. As a result, a south-facing window may be fine for certain orchids during the winter, but you may have to move the orchids to an east-facing window during the summer.

Listening to your orchids

Several types of orchids have varying light requirements because they naturally grow in a wide range of habitats. Some thrive in full sun on exposed rocks, while others are at home in dense jungle shade.

SUNROOMS ARE GREAT FOR GROWING ORCHIDS

Many orchid hobbyists just don't have space for a greenhouse but would like to have an attractive and functional place to grow and show off their orchids. Sunrooms, which can vary from an adapted greenhouse to merely a room that has large windows, can be a good solution.

The following photo is my sunroom. It faces east, and the smaller side window faces south and has large bright windows. I attached to the existing narrow windowsill 6-inch composite decking boards using stainless steel screws (so I don't have to deal with rust). The windowsill is now wider to better hold potted plants. Because these boards are waterproof, they won't warp or rot if they get wet from the potted plants. The sunroom is my wife and I and our dogs' favorite year-around room.

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TIP

The leaves of the plant give you some clue as to their light requirements (see Figure 5-3). Those with very tough, thick, stout, and sometimes narrow leaves frequently are adapted to very high light intensity. When the leaves are softer, more succulent, and wider, this is usually a clue that they're from a lower-light environment.

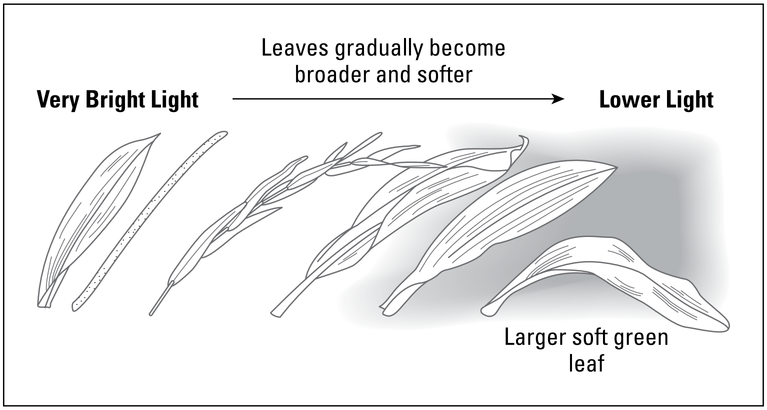

FIGURE 5-3: The type of leaf indicates an orchid's light requirements.

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TIP

Your orchids will tell you by their growth habits and leaf color if they're getting adequate, too little, or too much light. When orchids are getting enough light, you'll notice the following:

- The mature leaves are usually a medium to light green.
- The new leaves are the same size or larger and the same shape as the mature ones.
- The foliage is stiff and compact, not floppy.
- The plants are flowering at approximately the same time they did the year before.

WARNING

One of the most frequent results of inadequate light is soft, dark green foliage with no flowering. Another symptom of inadequate light is *stretching,* where the distance between the new leaves on the stem of orchids like paphiopedilum, phalaenopsis, or vandas is greater than with the older, mature leaves. Also, the leaves are floppy not stiff (see Figure 5-4). On other types of orchids, the new leaves tend to be longer and thinner.

When orchids get too much light, their leaves turn a yellow-green color or take on a reddish cast and may appear stunted. In extreme cases, the leaves show circular or oval sunburn spots (see Figure 5-5). The sunburn is actually caused by the leaf overheating, not necessarily by too much light. Although, in itself, this leaf damage may not cause extreme harm to the plant if the damage is isolated to a small area, it does make the plant unsightly.

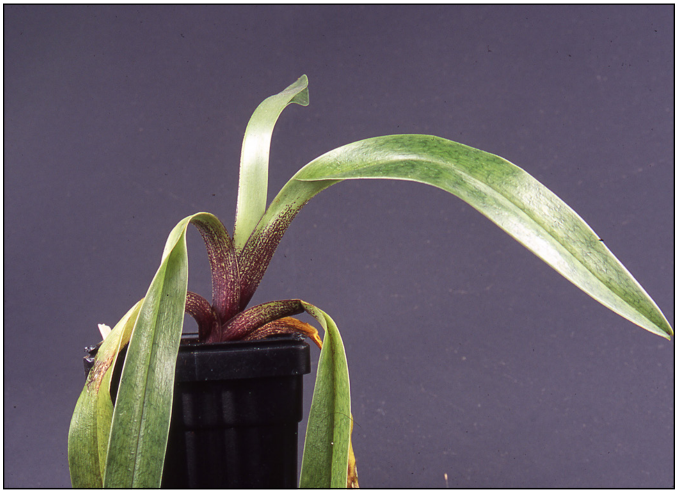

FIGURE 5-4: When orchids don't receive enough light, their foliage tends to be soft and floppy rather than firm.

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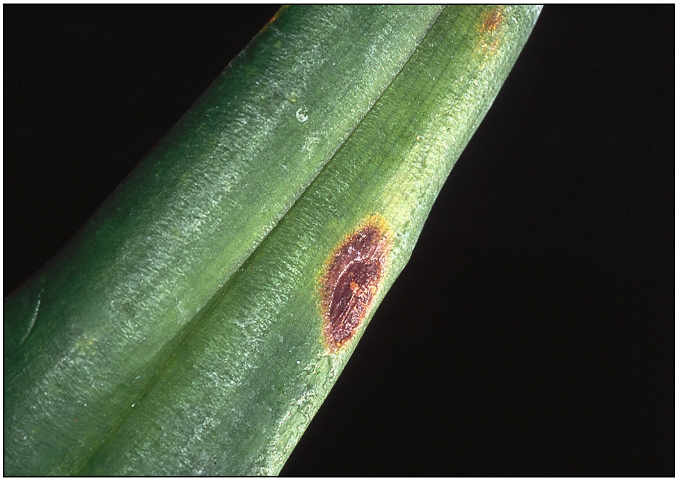

FIGURE 5-5: A paphiopedilum leaf with a round or oval brown spot caused by too much light or sunburn.

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WARNING

If the sunburn occurs at the growing point, it can kill that leaf or the entire plant. Higher light intensities than are usually recommended are possible with some orchids if you increase the ventilation to lower these elevated leaf temperatures. Some orchid cut-flower growers like to push their orchids with the highest light intensity they can take without burning to yield the maximum number of blooms. However, for most hobby growers, I don't recommend this.

Comprehending Some Basic Light Terminology

Before I delve into artificial lighting, I want to give you a better understanding of lamps by defining a few manufacturer terms that you'll encounter. Unfortunately, much of this information for each type of lamp or bulb isn't commonly available at the hardware or home store where you buy bulbs. You need to check it out on the websites of the various lamp producers. Here are some important terms you need to be familiar with:

- **CRI:** This acronym stands for Color Rendering Index, and it's on a scale of 1 to 100 with 100 roughly equivalent to the color of sunlight. The closer the bulb is to 100 the more natural the light and color of your flowers will look. Try to choose bulbs that have a CRI in the 90s.
- **Kelvin degrees:** This indicates the color of the light emitted. It's determined by the powdery phosphors that are incorporated in the tube of the lamp. The lower the Kelvin number, the redder (warmer) the light; the higher it is, the bluer (cooler) the light.

  For example, noon daylight is about 5,500 degrees Kelvin. Fluorescent lamps with lower color temperatures look red; fluorescents with higher color temperatures look blue. The color temperature of outside light varies from 5,500K to 6,800K depending on the time of day, weather, season, and latitude. Color temperatures of standard fluorescent lamps such as Warm White equals 3,000K, Cool White equals 4,100K, and Daylight equals 6,500K.

  Some plant-growth lighting folks recommend using bulbs with a lower Kelvin number that is toward the warm range (3,000K) for encouraging flowering and toward the cooler range 6,500K for vegetative or leaf growth. To cover both bases some folks use a 50/50 blend of these bulbs. Honestly, I just use 5,000K, 5,500K or 6,500K exclusively, and the orchids seem to do fine. I have tried the 50/50 blend and can't say I saw any difference in the orchid plant's growth or flowering.

  Those tubes with a high CRI and color temperature of 5,000 to 5,500 are the closest equivalent to noon sunlight. These tubes are commonly referred to as *broad spectrum* or *full spectrum* bulbs and the ones promoted as most desirable for plant growing.
- **Lumens:** The relative amount of light a bulb produces for the energy that it consumes is referred to as *luminous efficacy.* The higher the value, the more energy efficient the lamp is. The amount of light (*lumens*) produced is also related to the wattage of the bulbs, although each bulb type has some variation. The higher the lumen rating of the bulb, the brighter it is.

Considering Artificial Light Sources

Artificial light sources make it possible for everyone without greenhouses or bright windowsills to enjoy growing orchids in their homes. Although the limitations of what can be grown under these light sources are only restricted by equipment and electricity costs, it's a very practical method of growing for low- to medium-light orchids.

Wading through the many lighting options available today can be a daunting task, especially for beginners. Table 5-1 lists the most commonly used sources you can use to grow your orchids. This area is constantly evolving, so keep your mind open to new possibilities as they arise. The following sections break down your artificial light sources in greater detail.

TABLE 5-1 Artificial Light Sources

Type	Lifespan	Average Temperature That the Light Emits	Recommended Distance from Plants	Efficiency	Cost
HID Grow Lights	10,000 hours	600°F (315°C)	6–10 in (15–25 cm)	125 lumens per watt	Around $15 per bulb
HPS Grow Lights	18,000 hours	500°F (260°C)	4–6 in (10–15 cm)	140 lumens per watt	Around $150 per bulb and ballast
LED Grow Lights	50,000 hours	70°F (21°C)	10–16 in (25–40 cm)	25 lumens per watt	Around $200 per square foot panel
T8 Fluorescents	25,000 hours	100°F (37°C)	2–4 in (5–10 cm)	90 lumens per watt	$3–$5 per bulb
T5 Fluorescents	20,000 –35,000 hours	95°F (35°C)	2–4 in (5–10 cm)	110 lumens per watt	$5–$10 per bulb

Fluorescent lights

Fluorescent light systems of today are much different than they were years ago. Ones now available are much brighter and more energy efficient.

Here I explain in plain English the types of fluorescent bulbs good for growing orchids and recommend which fixtures to use with these bulbs.

The three Ts: 12, 8, and 5

Fluorescent bulbs are basically available in three types. The T designation refers to the lamp being tubular and the numbers after the T indicate the diameter of the bulb or lamp expressed in ⅛-inch (3 mm) increments. They are as follows:

- **T12:** They are 12⁄8 (36 mm) around and were the standard 40-watt fluorescent bulbs in the United States. Because they're not as energy efficient, they aren't used as often as they used to be when growing plants. In fact, by law they'll be phased out and replaced by the more energy-efficient T8.
- **T8:** These high-efficiency 34-watt bulbs are 8⁄8 inches (24 mm) around. They produce more light per watt, contain less harmful mercury, produce less heat, and are usually powered by silent, instant-start, flicker-free, buzz-free, electronic ballasts. Unlike the older lamps, these newer ones burn at their full light output for longer.
- **T5:** These tubes, which are ⅝ inches (15 mm) around, are the next generation of fluorescent technology and are presently my favorite of the fluorescent bulbs. T5s were introduced in the 2000s and are very bright, especially the HO (high-output) types. Of course, T5 fixtures and lamps are a bit more expensive than the T8s, and the T5 HO bulbs use more electricity than the standard T5 (4 inch T5 uses 28 watts; 4 inch T5HO uses 54 watts). The additional light the T5HOs emit (2,900 lumens for T5 and 5,000 lumens for T5HO) is worth the additional energy usage.

Although some people use the spiral, compact fluorescent bulbs, those kinds aren't usually practical for growing many plants because they produce a narrow circle of light. The standard linear bulbs are the most useful and economical choice. The most common and readily available length is 48 inches (1.2 m). Any lamp shorter is more expensive and because light intensity decreases significantly for all fluorescent lamps for 6 inches (15 cm) at the end of the tubes, it's not an efficient choice.

Considering fluorescent fixtures

The fixtures themselves come in a variety of types and styles. In most cases, the ones called *shop lights* are the more affordable and most readily available at hardware or home stores. If you choose these, make sure to get the ones with bright white, not gray reflectors, because they'll make your lights more efficient.

TIP

If you have older fixtures in which the reflectors have discolored over time, spray-paint them with glossy or flat white enamel paint. Oil-based paints will stand up best to the moisture that the light fixtures will encounter. The even more ideal reflector is one that is mirrored. Units with this type of reflector are more expensive, but even more effective.

Fluorescents are still some of the most accessible and economical lighting systems to buy. Three-tiered light carts, like the one shown in Figure 5-6, are highly versatile and practical. Most of them are about 2 feet wide (60 cm) by about 4 feet long (121 cm), so their three shelves provide 24 square feet of growing area. If you grow compact orchids, this will be enough space to have at least one or more orchids in bloom year-round. If you collect miniatures, this setup will provide a growing space adequate for a whole collection. The convenience of such a cart can't be beat; you can place it in a heated garage, in a basement, or in a spare bedroom.

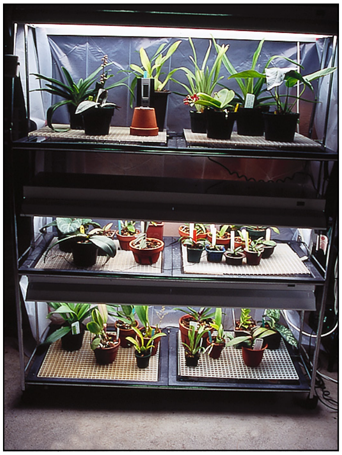

FIGURE 5-6: One of my off-the-shelf four-tube units with three tiers.

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Although some people have reported success with growing orchids under two-tube units, I prefer the four-tube units. Because the light from the four tubes overlap each other, the result is more than double the light produced. The additional light that they supply permits the grower to place the plants farther from the lights (easier access for watering and handling) and provides more light, especially in the center of the tubes for the light-loving orchids.

When the orchids start to produce their tall orchid spikes, there usually isn't enough head room under most fixed-height light units to accommodate this growing spike. At that point, you can move the orchids to a windowsill or use a light fixture that can be raised as the flower spikes develop, like the one shown in Figure 5-7.

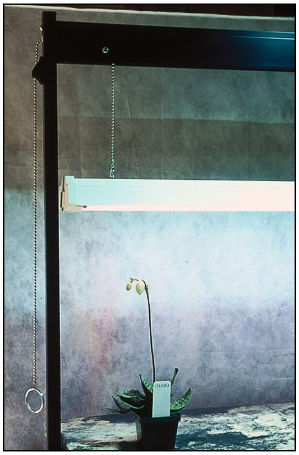

FIGURE 5-7: An adjustable light fixture like this one is very handy for accommodating developing flower spikes.

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High-intensity-discharge lights and high-intensity commercial LED lights

High-intensity-discharge lights (High Pressure Sodium [HPS] or Metal Halide [MH]) and commercial grade LED panels are a possible choice if you have a wide growing area or orchids that require high amounts of light like vandas and the plants that are tall so don't fit under standard light fixtures. These are very efficient in their production of light and are especially useful where you want to grow orchids requiring higher light intensities than fluorescent and standard LED lamps can provide and/or where you want a greater working distance between the lights and plants (see Figure 5-8).

The HPS and MH lamp can produce quite a bit of heat so they must not be placed too close to the tops of the plants, and they must have adequate ventilation. Fan cooling accessories frequently are available for these units to cool off the bulbs. HPS is more energy-efficient than MH, but the light it emits is orange-yellow and distorts the color of the flowers and foliage. MH produces blue light that is more pleasing to the eye. Some manufacturers now produce lamps that combine the advantages of both.

LEDs — The new kids on the block

With LEDs (which stands for *light emitting diodes*), light is produced from individual diodes instead of from the long tubes of fluorescent fixtures. This newer form of lighting is most noted for its energy efficiency and low heat output. All the information about light color still pertains to this light form.

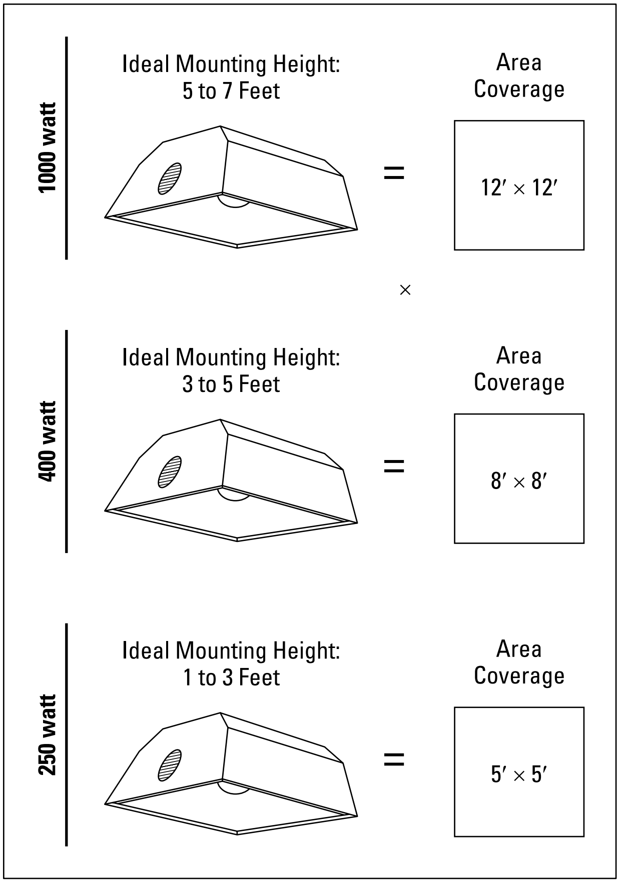
1000 watt
Ideal Mounting Height: 5 to 7 Feet
=
Area Coverage
12′ × 12′
×
400 watt
Ideal Mounting Height: 3 to 5 Feet
=
Area Coverage
8′ × 8′
250 watt
Ideal Mounting Height: 1 to 3 Feet
=
Area Coverage
5′ × 5′

FIGURE 5-8: Approximate growing areas for different wattages of high-intensity-discharge lamps.

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Until more recently the LEDs used in light fixtures didn't emit the right color or intensity to grow orchids, but that's changed. The need for economical light sources for growing hemp and for commercial indoor vegetable growing facilities has driven much of this improved technology.

LED panels don't have the heat problem of the high intensity discharge lights. Some of the commercial panels cast a purplish light that's fine for growing plants but will distort the color of the orchid's foliage and flowers. Some have a full spectrum light, so the light is more natural looking than the sodium vapor lamps or the purplish lights of some of the LEDs.

TIP

Some of the commercial units referred to as *dual band* put out mostly red and blue light so they can make your plants and flowers have a weird unnatural glow. If you want to see natural color on your orchid foliage and flowers, look for the units that are full spectrum so the light will appear white. Multi-color white units that blend red, blue, and green diodes also create a natural look for your plants.

LEDs will continue to improve in their light output and reasonable price, and more than likely they'll start to replace most other light forms, primarily because of their energy efficiency.

Figuring Out Which Type of Lights Are Your Best Option

Determining which lights you should use for your orchids is one of the most confusing — and sometimes highly debated — topics in light gardening. Distinguishing between science and advertising hype by the various bulb producing companies isn't easy.

TIP

If you're a beginner light gardener, I recommend starting with T5 fluorescent-light or LED setups. I find them to be most practical. Later, if you have the need, you can give the high-intensity-discharge lamps or LED panels a try.

Table 5-2 compares T5 fluorescents and LEDs to help you decide which one is right for you.

TABLE 5-2 Comparing T5 Fluorescents and LEDs

	T5 Fluorescents	LEDs
Light fixture cost	Half of LEDs	Twice as much as T5s
Replacement bulb cost	Half of LEDs	Twice as much as T5s
Lumen output	Varies depending on the unit selected	Varies depending on the unit selected
Energy usage	Twice as much energy as LEDs	Half as much energy as T5s
Light degradation	Degrade about 20 percent after a year or so	Degrade a bit slower
Life of bulbs	About 2½ times shorter than LEDs	Last about 2½ times longer than T5s
Heat output	Warmer than LEDs	Cooler than T5s

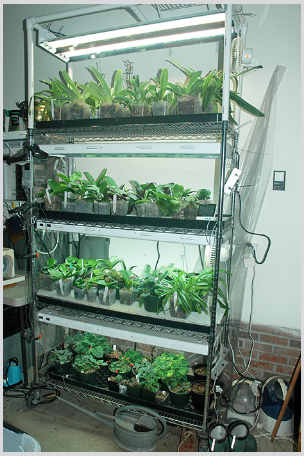
REMEMBER

The higher your electric rate, the more you'll pay if you use fluorescents because LEDs are more energy efficient. If you just have a few fixtures, you may not notice much difference in your electric bill. However, if you have a basement full of light fixtures, the electricity cost difference could be significant.

MAKE YOUR OWN LIGHT CART — SIMPLY AND CHEAPLY

You can also easily fashion your own light cart by using metal chrome wire shelving available at any home supply store and suspending whatever light fixtures you choose. The following is a photo of one I have in my heated garage that I made from these racks and light fixtures. This rack is 18 inches (45 cm) wide by 48 inches (121 cm) long by 7.5 feet (2.28 meters) high and has four tiers of lights to retain humidity and warmth.

I wrapped the back and two sides of the cart with heavy duty clear vinyl that I obtained at a fabric store. It works great and gives me a considerable growing area with a small footprint. I used three four-tube T5HO units, but you can also use LED fixtures. The trays on each shelf are plastic boot trays lined with egg crate louver to add humidity.



TIP

The truth is that fluorescents and LEDs work very well. If you already have T5s and want to switch to LEDs, you can buy retrofit LEDs, sometime referred to as HO LED Bars, which fit in T5 units. Get the ones that are wide spectrum if you want the more natural light look.

Knowing How Much Light Your Orchids Need

Opinions vary on how much light orchids need to grow and flower well. What you need to know is that greenhouse light intensity and color is different from fluorescent and LED light. Greenhouse light intensity and color varies dramatically depending on the time of day, cloud cover, time of year, latitude, and so on. Fluorescent lights and LEDs provide steady, constant illumination. For that reason, the amount of light intensity, commonly measured in *footcandles,* with fluorescents or LEDs can be quite a bit lower than what's recommended for greenhouse growing.

Fluorescent lights for growing orchids are usually burned for 12 to 16 hours per day, which is longer than the average natural day length. Fluorescent lights and LEDs have a lower light intensity than natural light in a greenhouse, so to compensate for this lower light intensity the orchids need to be under the lights longer.

You can purchase modestly priced accurate light meters to measure footcandles. If you decide to get one, make sure that it has a reading scale specifically for fluorescent lights and LEDs.

REMEMBER

The real test is how your orchids perform. If the foliage is too dark green and floppy, and the growth habit of the plant isn't compact but *leggy* (leaves are farther apart on the stem of the orchid and are usually soft and floppy), and if the orchids don't bloom on schedule with flowers of good substance and size, then the orchids aren't receiving enough light. If that's the case, move them closer to the lights, to the center of the tubes, and/or increase the lighting duration. If the leaves are taking on a yellowish cast, indicating too much light, place the plants farther way from or on the ends of the tubes or decrease the lighting duration.

Growing Orchids Under Lights — Tips and Tricks to Remember

Growing your orchids under lights is a very easy and successful way to grow orchids, but this method does come with some specific growing practices, which I discuss here:

- Because the light intensity under lights can be lower than those found in many greenhouses, you can somewhat compensate it by increasing the duration of light. On average, lights can be burned 12 to 16 hours per day. Some growers vary the length of lighting, depending on the natural season — a few hours shorter during the winter and few hours longer during the summer. I haven't found this to be necessary because most orchids aren't sensitive to or require seasonal light duration changes.
- The brightest light is under the center of the tubes, although the light may be more uniform under LEDs. Keep this in mind when placing plants with various light requirements.

- The heat from the tubes and ballast may cause a reduction in humidity, which can be an advantage in a cooler location. To conserve heat, wrap three sides of the growing area with polyethylene.
- Muffin fans, available at computer supply stores, are great for creating gentle air circulation that will remove excess heat produced by the lights or ballasts. Refer to the section, “Providing Ventilation — Fresh Air, Please!,” later in this chapter.
- Eventually all lights will start to lose some of their brightness. When you notice dark circular bands appearing at the end of the tubes, it’s an indicator that the tubes are starting to fail, so you may want to replace them as soon as you can. You also can use light meters placed close to the individual bulb to see if the newer bulb or array of LEDs is brighter than the older one. All the lamps eventually degrade and start to lose their light intensity. When this happens, you’ll be using the same amount of electricity to produce less light, so replace the bulbs sooner rather than later.
- The bulbs or LED diodes can quickly become coated with light-reducing dust or spray sediment from watering. To reduce the dust and sediment, keep the bulbs or LED diodes clean by periodically wiping them with a damp soft cloth to remove dust or mineral deposits from water splash.
- Water and electricity don’t mix, so use a ground fault outlet.
- In multitiered light gardens, the temperature can vary 5°F from the top shelf to the bottom one. Keep that in mind when deciding the best spot to place your plants. Maximum-minimum thermometers placed on the shelves are helpful in determining what this temperature differential is.

Humidity: Orchids’ Favorite Condition

Humidity is something you can’t see, but you can feel it on a muggy summer day or in a steamy greenhouse. Most orchids are from the tropics, where high rainfall and humidity prevail. When orchids get enough humidity, they grow lushly, and their leaves have a healthy shine.

WARNING

Insufficient humidity can stunt an orchid’s growth, and, in severe cases, it can cause brown tips on leaves. It can also contribute to buds falling off (known as *bud blast*), leaves wrinkling, and drying of the *sheaths* (the tubelike structures that surround the developing flower buds), which can result in twisted or malformed flowers.

During the winter, homes, especially those in cold climates with forced-air heating systems, usually have a relative humidity of about 15 percent. Because that's the average humidity found in most desert areas, you need to raise the humidity to at least 50 percent — a level that will make orchids happy.

TIP

Here are some recommendations to raise the humidity so your orchids can thrive:

- If you're growing your orchids in a greenhouse, you can either regularly hose down the walkways or hook up foggers and commercial humidifiers to a humidistat so that the entire operation is automatic.
- If you're growing your orchids in your home, you'll need a different approach. High humidity levels that would be no problem in a greenhouse will peel the paint, plaster, and wallpaper off the walls of your house. I assume you're probably not going for that look. In that case, I suggest you do the following to get to the desirable humidity range without causing damage to your house:
  - **Put your orchids in a naturally damp area, like the basement or bathroom.** Your orchids will appreciate the extra humidity provided by this environment.
  - **Use a room humidifier.** No matter where you put your orchids, use a room humidifier. I find the best type of humidifier is an evaporative-pad humidifier (in which fans blow across a moisture-laden pad that sits in a reservoir of water). An evaporative-pad humidifier is usually better than a mist humidifier because, unlike a mist humidifier, it doesn't leave your orchids with a white film (from the minerals in the water being deposited on the leaves).

You may have seen advice to increase the humidity level to try growing the plants on top of a waterproof tray filled with pebbles where water has been added slightly below the surface of the pebbles. Then the plants are placed on top of this bed of gravel. However, I don't recommend this method because the pots, especially the heavy clay ones, frequently sink into the pebbles, resulting in the media in the pots getting soggy. After repeated watering, the pebbles become clogged with algae, becoming a repository for insects and various disease organisms.

The approach that works better is to add sections of egg-crate louvers (sold in home-supply stores for diffusing fluorescent lights) to the trays (see Figure 5-9). You can cut this material with a hacksaw to whatever size you need. It's rigid so it will support the plants above the water, and the water is more exposed to air, so more humidity results. The grating is simple to clean — just remove and spray it with warm water. To prevent algae or disease buildup, you can add a disinfectant like Physan to the water in the trays.

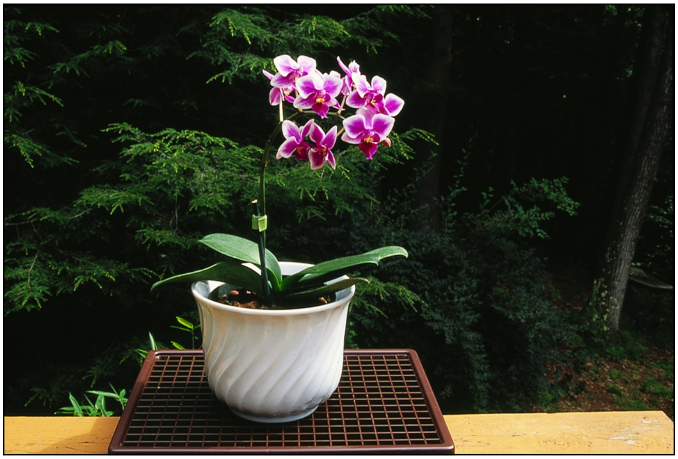


FIGURE 5-9: An egg-crate louver set inside a waterproof tray.

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BLASTED BUD BLAST!

Nothing is more disheartening than having the buds of your orchids shrivel up right before they open! This is referred to as *bud blast* and is caused when the orchid undergoes several types of stress. Here are some of the specific causes of this exasperating event:

- Low humidity
- Hot air from furnaces or cool, dry air from air-conditioners directly blowing on the orchid plant
- Over- or underwatering
- Poor root development
- Temperatures that are too high or too low
- Water standing in the buds or bud sheaths
- Dramatic change in the orchids' environment, like bringing the plants from outside to inside
- Natural-gas leaks in the house
- Ethylene gas from ripened fruit
- Light that's too bright on the developing flower buds
- Pollution, such as smog

Providing Ventilation — Fresh Air, Please!

In most tropical lands where orchids reside, they luxuriate in incessant, but gentle, trade winds. Air movement in a growing environment ensures a more uniform air temperature and dramatically reduces disease problems by preventing the leaves from staying wet too long. It also evenly distributes the gas (carbon dioxide) that is produced by the plants in the dark and used by the plants to produce their food during the daylight hours.

TIP

You don't want to create gale-force winds in your growing area, but you do want to produce enough airflow to cause the leaves of the orchids to very lightly sway in the breeze. I've found that two of the most effective methods for providing such an airflow in both a hobby greenhouse and an indoor growing area are ceiling fans and oscillating fans.

Ceiling fans

Ceiling fans move a huge volume of air at a low velocity in a circular pattern, so they effectively prevent severe temperature differences, are inexpensive to operate (they use about the same electricity as a 100-watt bulb), are quiet, have variable speeds, and are easy to install. They stand up well to moist conditions, especially if you buy the outdoor types. Another nice feature is that you can adjust the air-circulation pattern on most of them so that they can either push warm air down (the recommended winter setting) or pull cool air up (usually the best summer setting), as shown in Figure 5-10.

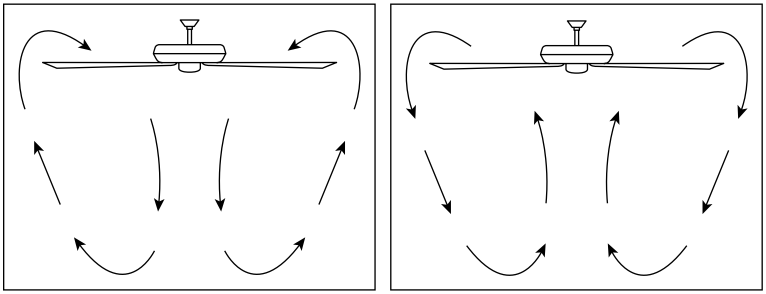

FIGURE 5-10: Ceiling fans can be set either to push warm air down (best for winter) or pull cool air up (best for summer).

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Oscillating fans

Oscillating fans are also a desirable choice, because they effectively cover large areas with a constantly changing airflow pattern without excessively drying off the plants.

TIP

If you decide to go with oscillating fans, splurge for the better-grade ones. Fans that are very inexpensive have plastic gears that strip easily, so the oscillating feature won't last long.

Muffin fans

You may have small hot or cold spots in your greenhouse, windowsill, or light cart where just a touch of airflow is needed. This is where small muffin fans, frequently sold for cooling computers (available at electronics or computer-supply stores), are perfect for the job. They're efficient, quiet, and very inexpensive to operate.

Looking Closer at Orchid Temperature Requirements

Orchids are frequently placed by professional orchid growers into three distinct categories based on their *night* temperature preferences:

- **Cool:** 45°F to 55°F (7.2°C to 12.8°C)
- **Intermediate:** 55°F to 60°F (12.8°C to 15.6°C)
- **Warm:** 65°F (18.3°C) or higher

The assumption is that the *daytime* temperature will be at least 15°F (9.5°C) warmer than these night temperatures.

These numbers are guidelines, not absolutes. Most orchids are quite adaptable and tolerant of varying temperatures, short of freezing. But for optimum growth, these temperature ranges are good targets.

Too-low temperatures

If orchids are exposed to cooler than the recommended ranges, their growth will be slowed down and, in extreme cases, buds may fall off before they open (known as *bud blast*). Also, cooler temperatures can reduce the plant's disease resistance.

TIP

GET RID OF THE LAGGARDS!

You may find that a few of your orchids just don't appreciate the home you've given them. Maybe they don't get enough light, or your home is too cool. Whatever the reason, if you've done your best to provide the right conditions and the orchid still doesn't grow well and bloom, it's time to get tough and get rid of it! Give it to a friend with different growing conditions. So many orchids easy to grow are out there that you don't need to be wasting your time and valuable and limited growing space on a poor performer.

Too-high temperatures

If it gets too hot, orchids will show their displeasure by slowing or stopping their growth, having their flower buds wilt before they open, having their leaves and stems shrivel, and in extreme cases, by dying. A short bout of higher-than-desired temperatures won't be that harmful as long as the humidity stays high.

TIP

One critically crucial factor with orchids is that they need at least 15°F (the same relative amount in C) higher daytime temperatures than they get in the evening. If they don't get this temperature difference, the orchids won't grow vigorously and, probably most importantly, they won't set flower buds. Not meeting this temperature requirement is one of the most common reasons that homegrown orchids don't bloom.

Giving Your Orchids a Summer Vacation

Some orchid growers continue growing their plants indoors under lights, on windowsills, or in their greenhouses throughout the summer. The challenge during this time is to reduce the light intensity and control the high heat, both of which can be damaging.

For these reasons, summering the orchids outdoors is an attractive option. For the light gardener, this means a welcome relief from high electric bills; and for the greenhouse and windowsill grower, it provides an opportunity to clean up the growing area. Also, most orchids aren't in bloom during the summer, so they aren't at their best visually and they respond very favorably to a summer vacation outdoors.

Besides providing an opportunity to clean up your indoor growing area, having a space outdoors allows you to apply pest controls, if necessary, without smelling up your house. The natural temperature differential between day and night, especially in the early fall, is highly effective in setting flower buds for the upcoming late-fall and winter blooming.

A shade house

I summer my orchids in a shade house made of preconstructed *lath* (slates of crisscrossed wood), nailed or screwed to pressure-treated upright wood supports. A *shade house* is simply a structure to which wood slates (or lath) or shading fabric, usually a knitted polyethylene fabric, is attached to the structure to reduce the light intensity to be closer to the correct light intensity favorable for orchids. The goal for growing orchids outdoors is usually a 50 to 60 percent shade. You accomplish it with various spacings of wood lath or with different densities of shading fabric that are available in various percent shade ratings. Figures 5-11 and 5-12 show what my shade house looks like.

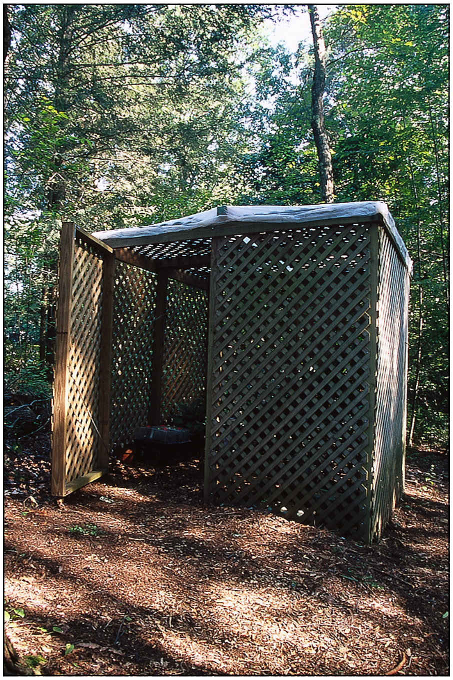

FIGURE 5-11: My shade house is an 8-foot (2.4-m) square simply constructed using wood lath and 4-x-4-inch (10-x-10-cm) pressure-treated wood posts.

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Shading (usually about 50 to 60 percent or more depending on the location of the shade house and the types of orchids grown) is necessary and is provided by lath or shading fabrics. I also installed in this shade house a watering system made up of multiple small sprayers or misters controlled by a timer that has a manual override. I grow the plants on stepped wire frame benches that ensure even lighting and easy watering.

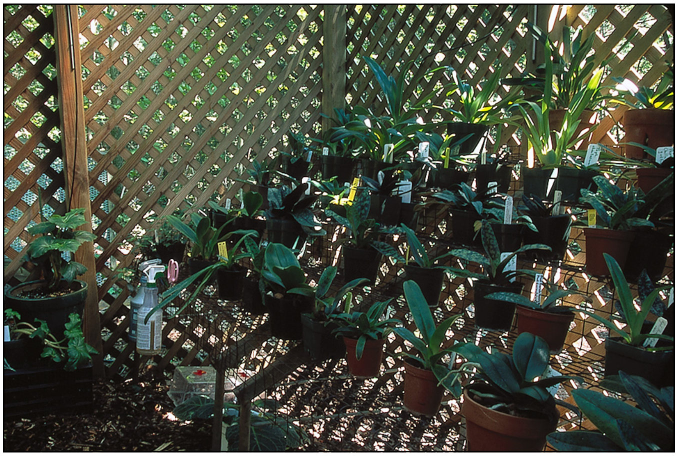

FIGURE 5-12: Inside the shade house, plants are arranged on stepped-wire benches to allow easy watering and good air and water drainage.

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I cover the roof of the shade house with 6 mil (0.006-mm-thick) heavy-duty clear plastic, which is stretched over a peaked wooden frame. I used to leave the roof of the lath house open to receive natural rainfall, but I found that it sometimes rained when I didn't want it to (at night, when it was too cool, or when it was already wet). I find the covered roof gives me the control to water when my plants need it.

A portable greenhouse

I've also summered orchids in a portable greenhouse on the deck (see Figure 5-13). A *portable greenhouse* is a greenhouse made of lightweight materials that can be easily moved. It's rarely heated and is usually only used in mild weather to keep orchids during the summer. If you use such a structure, be sure to put it in a place that receives shade during the heat of the day or use a commercial shading fabric to cut down the light intensity. Also, be mindful of the daytime temperatures inside such a structure. These units require good systems of ventilation; otherwise, temperatures inside them can skyrocket in sunny periods.

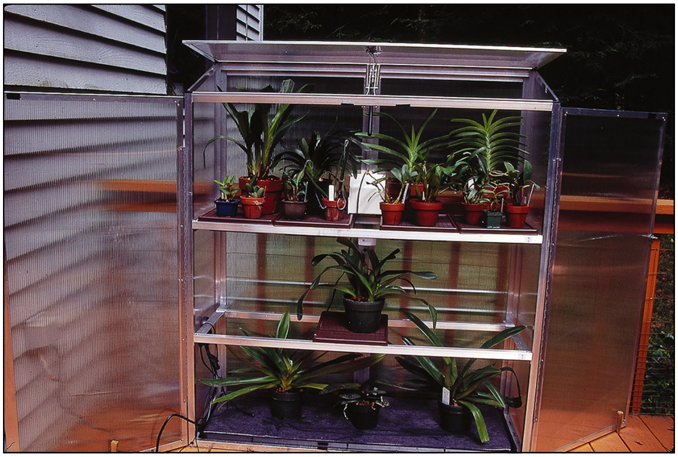

FIGURE 5-13: An outdoor portable greenhouse can be an ideal place to put your orchids in the summer.

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Some orchids enjoy hanging out

Orchids that have higher light requirements, like vandas and ascocendas, grow wonderfully dangling from pot hangers clipped to the pot (see Figure 5-14) and then hung from a pole or other support. Just make sure the light intensity of this growing area matches the needs of the orchids.

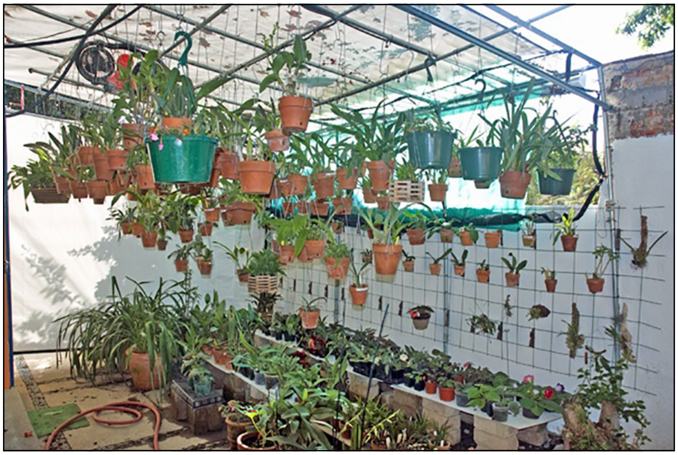

FIGURE 5-14: Summer your orchids outdoors by using pot clamps to hang them from a freestanding support or a suspended rod against the garage.

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KEEPING THINGS IN BALANCE: THE YIN AND THE YANG OF ORCHID GROWING

When it comes to your orchids' growing conditions, it's a matter of keeping everything in balance. Here are some tips to keep in mind:

- If the air temperature is cool, the orchids need less water and light.
- If the humidity is high, the orchids need more air circulation.
- If the light is very bright and/or the temperature is high, the humidity needs to be high.
- When orchids are not actively growing, reduce or stop fertilizing.
- If the temperatures are high, the light and humidity need to also be high, and the orchids will require more-frequent watering.

IN THIS CHAPTER

- **Mastering the art of watering**
- **Knowing when and how to water**
- **Recognizing symptoms of over- and underwatering**
- **Selecting and using orchid fertilizers**

Chapter 6

Watering and Fertilizing Orchids

Probably more orchids are killed by improper watering, usually by overwatering, than by any other cultural practice. Discovering how to properly water orchids is one of the more challenging aspects of growing orchids. In this chapter, I explain some simple but very effective methods that will turn you into a watering pro.

In addition to mastering the art of watering, the fertilizing game can be very confusing — so many different types and formulations! In this chapter, I show you how to wade through the maze of fertilizer terms to get to the important information — you'll be able to choose the fertilizer that will give you healthy orchids with the best blooming.

Understanding the Art of Watering Orchids — Water, Water Everywhere

When I give talks about orchids, one of the first questions asked by those in the audience is, "How often should I water my orchids?" I really wish this question had an easy answer, but it doesn't. So many variables are involved in watering.

In the following sections, I cover some of the factors that affect how often you should water.

The type of pot

You can grow orchids in plastic or clay pots. The potting material dries off much more slowly in plastic pots than it does in clay pots. The following can help you distinguish between the two:

- **Plastic pots:** The potting material dries out from the top down, so even though the potting material may be dry on top, it may be damp 1 inch (2.5 cm) below the surface.
- **Clay pots:** The potting material dries out more uniformly (clay pots are porous, so they allow water to evaporate through the walls of the pot).

TIP

The bottom line: If you're using a plastic pot, you'll want to water less often than if you're using a clay pot.

REMEMBER

Either type of pot will grow orchids; they merely have different watering requirements. For orchids that resent drying (like miltonias, slippers, and moth orchids), I prefer to use plastic pots. For those that need to dry out more between waterings (like cattleyas and most of the dendrobiums), you may find clay pots a better choice.

In Part 3, I provide an overview of numerous orchids to choose from that are available throughout the United States.

The type of potting material

Potting materials vary dramatically in terms of the amount of water they retain. For instance, sphagnum moss, a highly water-absorbent plant that is harvested from bogs to be used as a potting material, and coconut husk chips usually stay wet much longer than bark, which isn't as water-retentive.

TIP

If you're using a potting material that absorbs a lot of water, you'll want to water less often than if you use a potting material that doesn't absorb the water. To determine whether the potting material is absorbent, soak some of it in water for a few hours. Then remove the material and squeeze it. If it's absorbent, it will release this water, under pressure, like a sponge.

The age of the potting material

Fresh potting material requires much more frequent watering for the first few weeks, until it gets properly wetted. As it gets older, it retains water longer.

Whether the orchid is pot-bound

An overgrown orchid (sometimes referred to as an orchid that is *pot-bound*) will dry off much more quickly than one that has plenty of space in the pot. When pot space is limited, there is less potting material to hold onto the water, so the overgrown plant quickly uses it up.

REMEMBER

In general, most orchids need to be repotted every one to two years. In Chapter 7, I give you the complete scoop on repotting orchids.

The growing environment

Are you growing your orchids in high humidity or low? Orchids and potting materials in low humidity dry off more quickly because the drier air quickly absorbs the moisture from both the plant and the potting material.

The temperature

Warmer temperatures increase water evaporation because warmer air absorbs more moisture and because the plants are growing more quickly in warmer temperatures and require more water. If you're growing orchids in a cooler temperature, you won't need to water as often.

The amount of ventilation

The more ventilation your orchids get — especially if air is vented to the outside, or if the air is hot and dry, as is found in most centrally heated homes during the winter — the quicker the water in the potting material evaporates. Gentle air movement is ideal. It will keep the air fresh without excessively drying out the plants or potting material.

Whether the orchids are growing or dormant

When species of certain orchids (like some of the dendrobiums and catasetums) are going through their winter rest period, they need and should only be given very little water. But when they start active growth in the spring and summer, they need copious amounts of water.

The type of orchid

Some orchids, like cattleyas, like to dry out between waterings; others, like paphiopedilums, phalaenopsis, and miltonias, prefer not to totally dry out. This difference has a lot to do with where the particular type of orchid grows naturally. If the orchid naturally grows in an area where it doesn't get natural rainfall on a regular basis, it won't need watering as often as orchids that grow in areas of frequent rainfall.

Knowing What Works — Watering Your Orchid

When you've considered the factors such as potting material, environment, and type of orchid (see the preceding section), you need to make the decision as to when and how much to water. These sections walk you through one of the simplest ways to water your orchid and explain some tips to make watering easier.

Using the pot-weighting method

I find the pot-weighting method of deciding when to water is one of the easiest. In this method, you're relying on feel instead of precise weights. Follow these simple steps:

1. **Thoroughly water the orchid in its pot.**
2. **Estimate the approximate weight of the pot by picking it up.**

   Now you know how heavy it is when it's saturated with water.
3. **Wait a day or so and weigh it again.**

   You'll feel the difference in the weight as the potting material becomes drier.

4. **Repeat Step 3 each day until you judge, by looking at the surface and sticking your finger into the top 1 inch (2.5 cm) or so of the potting material to see if it's damp, that it's time to water.**

   Keep in mind whether this type of orchid prefers to be on the damp or dry side.

5. **Note what this dry weight is.**

   Now the orchid is ready to be watered thoroughly.

This entire process may sound tedious, but you'll be amazed at how quickly you catch on. And when you do, you'll always know the right time to water. Just lift the pot, note its weight, and you'll have your answer.

Watering your orchids — Tips and tricks

If you're still not quite sure about watering, keep the following watering tips in mind:

- **Grow orchids of the same type, media, pot type, and size in the same area.** This strategy will make watering them easier because they'll have very similar moisture requirements.
- **Water with warm water.** Very cold water can cause root and bud shock, which sets back the plant and slows down its growth.
- **Always use a water breaker.** A *water breaker* is a water diffuser that you attach to the front of your hose to soften the flow of water. For only a few orchids, a sprinkling can with a long spout with a *rose* (a water diffuser placed on the end of the water-can spout) that has many small holes works well. These devices allow thorough watering without washing out the potting material.

  A huge selection of watering wands is available. I really like the ones with multiple settings on the head that allow you to drench or mist without changing attachments. Regulating the flow of water is much easier with wands equipped with finger triggers than it is with those that have an on-and-off valve. (See Chapter 3 for more information on tools and supplies.)
- **Never let the water breaker or end of the hose touch the ground or floor.** This commandment was given to me by my first horticulture professor, Dr. D.C. Kiplinger, who preached those floors and soil are where the diseases and insects hang out, and a hose can be an all-too-effective way of spreading them.

- **When you water, water thoroughly.** The water should pour out from the bottom of the pot. This method of watering ensures that the potting material is saturated and flushes out any excessive fertilizer salts.
- **Never let the pots of orchids sit in water for more than an hour.** If the orchid pots have saucers, make sure to keep them free of water. Excess standing water will prematurely rot the media and roots and will be a source of accumulating fertilizer salts and *pathogens* (disease-causing organisms, like bacteria, fungi, or viruses).
- **Water the orchids early in the day or afternoon.** That way, the foliage will have plenty of time to dry off before nightfall. Wet foliage in the evening is an invitation for disease.

Over- or Underwatering: Roots Tell the Story

Over- and underwatering show many of the same symptoms because the effect of both practices is the same — damaged or destroyed root systems, which result in the orchid becoming dehydrated. The signs of dehydration include

- Pleated leaves on orchids like miltonias (see Figure 6-1)
- Excessively shriveled *pseudobulbs* (thickened, swollen stems) of some orchids, like cattleyas
- Droopy, soft, and puckered leaves on cattleyas
- Yellow and wilted bottom leaves on phalaenopsis
- *Bud blast* (in which the buds fall off instead of opening) on all orchids

Of course, before you do anything to correct watering problems you have to first determine if improper watering is an issue. Here are some things to consider.

Figuring out whether watering is the problem

To better evaluate whether over- or underwatering has caused these symptoms, remove the orchid from its pot. Many beginner growers are reluctant to do this, but if you're careful, removing the orchid from its pot won't disturb most orchids to any degree and it's an absolutely necessary procedure to see what's going on with the root system.

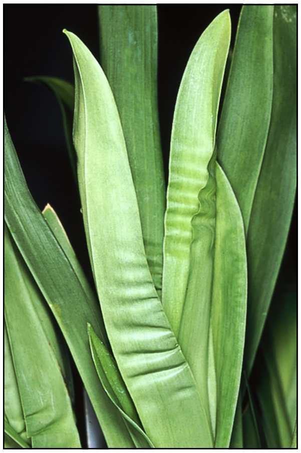

FIGURE 6-1: The pleated or puckered leaf of this miltonia orchid is a sign that the orchid is dehydrated.

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TIP

To determine if you've under- or overwatered your orchid, follow these steps:

1. **Turn the orchid plant, in its pot, upside-down.**
2. **Gently rap a hard object (like the handle of a gardening tool) against the pot to loosen the potting material.**

   Cup your hand over the surface of the pot to hold the loosened potting material as it falls out. Doing this over a workbench or a table covered with clean newspaper to hold the potting material is a nice, neat approach.
3. **If the potting material doesn't loosen easily, use a thin bladed knife to circle the inside of the pot to loosen the potting material from the wall of the pot.**

   TIP

   In some situations, the potting material may be so packed into the pot that it won't come out easily. If that's the case, you may have to cut the pot if it's plastic or break it if it's made or clay or aceramic material to remove the plant and its roots.
4. **When the orchid is removed from the pot, check out the potting material.**

   Is it soggy? Does it have a bad (rotting) smell? Are the roots dark and mushy? These are all signs of overwatering.

   If the roots are dry and shriveled, not stiff and plump, and have no or few growing root tips, the orchid probably hasn't gotten enough water. The potting material may be too coarse, making poor contact with the roots; otherwise, you simply haven't watered the orchid often enough.

5. **If the roots look okay or only slightly damaged, pot the orchid again in fresh potting material.**

   See Chapter 7 for more details on potting orchids.

6. **If you find that the roots are badly damaged, read the following section for more information.**

Rescuing and resuscitating your orchid

The approach you take to remedy root damage depends on how dire the situation is.

TIP

If the orchid still has some healthy, firm roots, cut off all the soft, mushy roots with a sterile tool, like a single-edged razor, and repot the orchid in new potting material. Go light on the watering for a few weeks to encourage new root development. Using a spray bottle, mist the orchids a few times a day to prevent the leaves from drying out.

TIP

If the roots are almost all gone, emergency measures are called for and recovery is not definite. This is what I recommend:

1. **Cut off all the dead or damaged roots.**
2. **Drench the roots with a liquid rooting hormone like Dip 'n Grow.**
3. **Let this liquid hormone dry on the roots for about an hour, and then repot the orchid in fresh potting material that has been pre-dampened.**
4. **Don't water for a day.**
5. **Water once, and then put the potted orchid in an enclosed terrarium (like a high-top propagator) or an empty aquarium, with damp sphagnum moss or pebbles on the bottom to add humidity.**

   A *high-top propagator* is a clear plastic box with vents at the top and a tray below to hold potting material.

6. **Close the top of the terrarium and put it in a location with diffused light.**

   In a greenhouse, this is a shady spot with no direct sunlight. Under fluorescent lights, put the terrarium at the ends of the tubes where there is less illumination. If the terrarium is in the cool part of the greenhouse or growing area, put the entire terrarium on water-resistant soil or seedling heating mats, available at most garden centers. Get one that has a built-in thermostat set for about 70°F (21°C) to provide bottom heat to stimulate rooting.

7. **If you're concerned about disease, spray the orchid leaves with a disinfectant solution.**

   A good disinfectant is Physan, a commonly used hospital disinfectant available from mail-order orchid-supply companies or at garden centers.

   TIP

   As with all pesticides be sure to read the directions carefully. If you use this material or any other chemical control incorrectly, you can damage the plant.

In this environment of 100 percent humidity, the leaves won't dehydrate, so there will be no stress on the orchid while it re-roots itself. Water the potting material only when it gets dry, keep the gravel or moss in the bottom of the terrarium damp, and leave the orchid enclosed until new root growth is very clear. This may take a few months.

REMEMBER

This method has no guarantees, but following this procedure has sometimes saved orchids for me that were in the hopeless category. Many times, though, the orchid was just too far gone to save it, so you may be better off throwing it away and getting a new one to takes its place.

Figure 6-2 shows my orchid rescue, the place where I put orchids that have suffered a loss of roots. It's like a miniature greenhouse with high humidity, which encourages the orchids to form new roots.

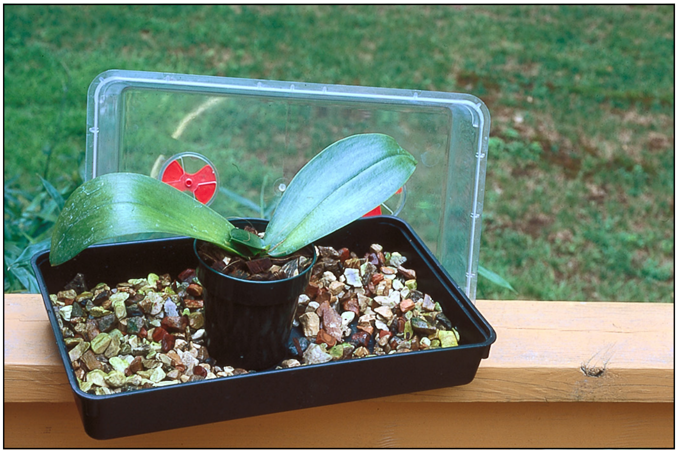

FIGURE 6-2: My orchid rescue, the place where I put orchids that have suffered a loss of roots.

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Considering Fertilizers — Not Magic Potions

Many people place much too much faith in fertilizers. They think fertilizer is some type of elixir that will save the day. Actually, if the orchid is in poor health, fertilizers are rarely the answer.

WARNING

In fact, if the roots are damaged (a frequent problem), applying fertilizers will make the problem worse. If roots aren't functioning well, they can't absorb the fertilizer, and if the fertilizer isn't used by the orchid, it can accumulate in the orchid potting material. This buildup of fertilizer salts can further dehydrate and damage the remaining roots.

TIP

Fertilizers are most useful as a boost to help an already healthy orchid grow better.

Many people mistakenly think of fertilizer as food — which it isn't. Plants produce their own food from sunlight, carbon dioxide, and water. That's the miracle called *photosynthesis.* By fertilizing, you're merely providing extra minerals that your orchids can use to make photosynthesis more efficient.

The number and types of fertilizers on the market can make your head spin! You'll hear a lot of mumbo-jumbo about why one fertilizer is better than another. Fortunately, the choice isn't nearly as complicated as some manufacturers seem to make it.

So many different types and brands of fertilizers are available. How do you know which ones are for you? Here I discuss the different options.

Knowing what to look for in orchid fertilizers

From my experience and after listening to other veteran orchid growers, I've come to some conclusions about fertilizers. The following suggestions apply to most orchid-growing situations:

- **Look at the label and choose a fertilizer that has the words *nitrate nitrogen* or *ammoniacal nitrogen,* not *urea.*** Although all forms can be used by plants, research shows that the nitrate and ammoniacal forms, not urea, are most beneficial and available to orchids. These chemical terms may sound like Greek to you, but you don't really need to know any more than to look for these types of nitrogen in your fertilizer. The label has what you need to know.

- **Look for a fertilizer with 20 percent or less nitrogen.** Nitrogen is the first number listed on the label. High amounts of nitrogen, much more than 20 percent, aren't necessary to grow the best orchids no matter what media they're grown in. The orchid plant can't use too much of any nutrient, and, as a result, merely ends up as a pollutant.
- **Don't worry about the amount of phosphorus in the fertilizer.** Horticulturists earlier thought that a high-phosphorus fertilizer was necessary for better bloom, but that's no longer the case. Most of the orchid fertilizers on the market contain sufficient phosphorous for growth and flowering.

  In most cases, a fertilizer with supplementary calcium (up to 15 percent) and magnesium (up to 8 percent) is a real plus (basically a 2-to-1 ratio). That's especially true if your water source doesn't already contain calcium.

  For most water sources, adding *trace elements* (chemicals in very small amounts), including sodium, manganese, copper, zinc, boron, iron, and molybdenum, has been found to be beneficial to orchid growth. Don't worry about the exact amounts; just check the fertilizer container or label to see if they appear in small amounts.

Any fertilizer that meets these requirements will do. To find out if your chosen fertilizer does, carefully look at the fertilizer container. By law, the manufacturer is required to list what chemicals are included in the fertilizer. Figure 6-3 is an example of a label so you can see what to look for.

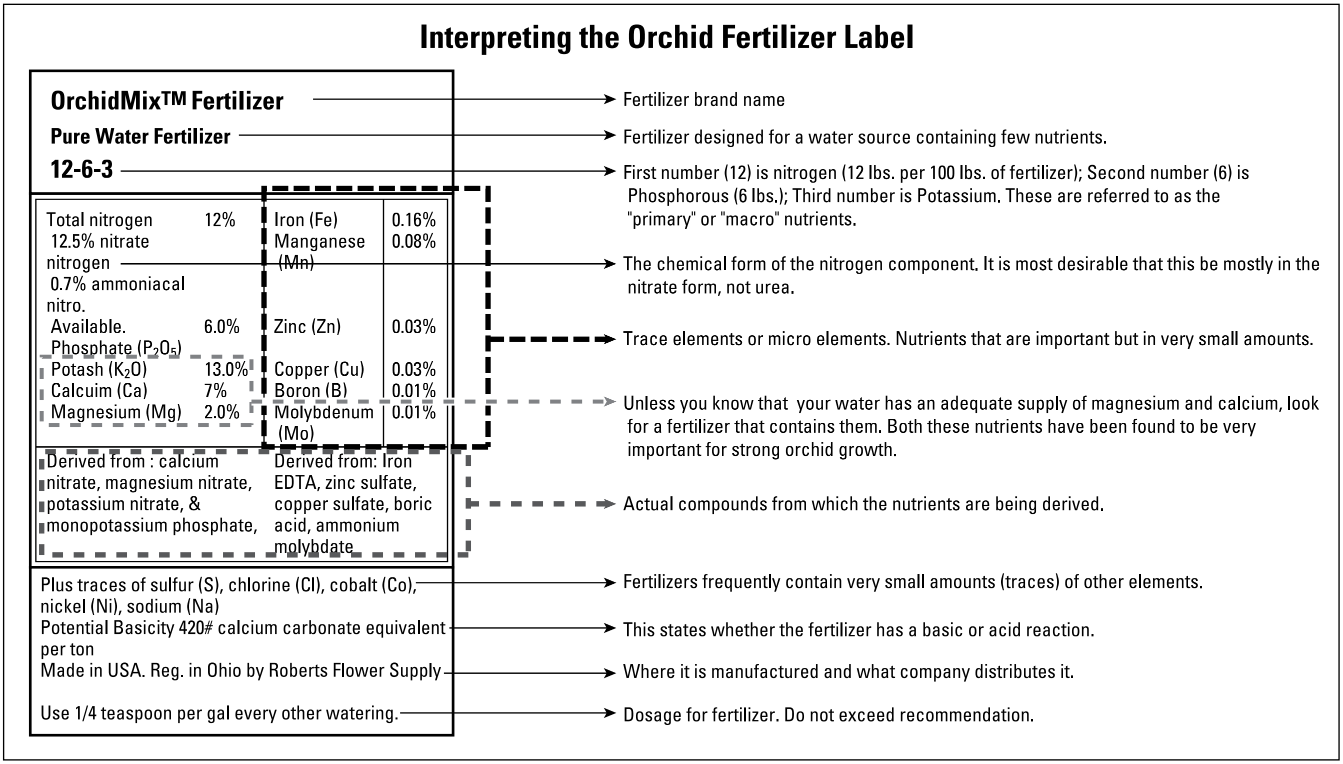
WARNING

Don't use water that has passed through water-softening units on your orchids. Such water may contain high amounts of sodium that can be harmful to orchids.

REMEMBER

WATCH OUT FOR FERTILIZER BURN

When too much fertilizer has been applied, if it has been applied when the media is dry, or if the roots of the orchid are hypersensitive to the salts in the fertilizer, the roots can become dehydrated by these moisture-robbing salts, resulting in *fertilizer burn.* This damage shows up as brown or black root tips and/or leaf tips. It looks as though the root tips or leaves have been burned (thus, the name). To prevent it, don't apply more fertilizer than is recommended and fertilize only when the potting material is damp.



Interpreting the Orchid Fertilizer Label

OrchidMix™ Fertilizer
Pure Water Fertilizer
12-6-3

Total nitrogen	12%	Iron (Fe)	0.16%
12.5% nitrate nitrogen		Manganese (Mn)	0.08%
0.7% ammoniacal nitro.			
Available. Phosphate (P_2O_5)	6.0%	Zinc (Zn)	0.03%
Potash (K_2O)	13.0%	Copper (Cu)	0.03%
Calcuim (Ca)	7%	Boron (B)	0.01%
Magnesium (Mg)	2.0%	Molybdenum (Mo)	0.01%

Derived from : calcium nitrate, magnesium nitrate, potassium nitrate, & monopotassium phosphate,	Derived from: Iron EDTA, zinc sulfate, copper sulfate, boric acid, ammonium molybdate

Plus traces of sulfur (S), chlorine (Cl), cobalt (Co), nickel (Ni), sodium (Na)
Potential Basicity 420# calcium carbonate equivalent per ton
Made in USA. Reg. in Ohio by Roberts Flower Supply

Use 1/4 teaspoon per gal every other watering.

Fertilizer brand name

Fertilizer designed for a water source containing few nutrients.

First number (12) is nitrogen (12 lbs. per 100 lbs. of fertilizer); Second number (6) is Phosphorous (6 lbs.); Third number is Potassium. These are referred to as the "primary" or "macro" nutrients.

The chemical form of the nitrogen component. It is most desirable that this be mostly in the nitrate form, not urea.

Trace elements or micro elements. Nutrients that are important but in very small amounts.

Unless you know that your water has an adequate supply of magnesium and calcium, look for a fertilizer that contains them. Both these nutrients have been found to be very important for strong orchid growth.

Actual compounds from which the nutrients are being derived.

Fertilizers frequently contain very small amounts (traces) of other elements.

This states whether the fertilizer has a basic or acid reaction.

Where it is manufactured and what company distributes it.

Dosage for fertilizer. Do not exceed recommendation.

FIGURE 6-3: The label on an orchid fertilizer reveals what the product contains. Read it closely.

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Identifying types of fertilizers and how to use them

Fertilizers come in many forms — *granule* (which looks like small pieces of gravel), slow-release, and water soluble being the most commonly available. Table 6-1 lists the pros and cons of each of these types. Here are the three types:

- **Granule:** Most granule fertilizers are best suited for agricultural or lawn application. I don't recommend this type for orchids because it releases too much fertilizer too quickly that can result in damaged orchid roots.
- **Slow-release:** Slow-release fertilizers are chemicals that have been encapsulated in a perforated biodegradable shell that slowly releases nutrients based on temperature. The warmer the temperature, the quicker the fertilizer releases the nutrients. Although some orchid growers use this type, I've found with some of the very porous potting materials that are frequently used with orchids, that the fertilizer can wash out and not be effective.

TABLE 6-1 The Pros and Cons of Different Fertilizers and How to Use Them

Type of Fertilizer	Advantages	Disadvantages	How It's Applied
Granule	Readily available Easy to use Inexpensive	Short-term (lasts a few to several weeks) Can easily burn orchid roots Often doesn't include valuable trace elements	In dry form On top of or incorporated into the potting material
Slow-release fertilizer	Easy to use Lasts a long time (three to nine months, depending on the formulation)	Can sometimes burn sensitive orchid roots In coarse potting material, can be washed out when watered Relatively expensive	In dry form On top of or incorporated into medium
Water-soluble fertilizer	Readily available in a wide range of formulations Easy to apply Nutrients are instantly available for plants	Must be applied frequently — every few weeks when plants are actively growing	Diluted in water and applied by watering can

Some orchid growers have placed this type of fertilizer in small plastic baskets or netting placed on the top of the orchid media, so the water goes through this fertilizer into the media without being washed out.

- **Water-soluble:** This type is the most common form of fertilizer used with orchids. Water-soluble fertilizers are packaged as a concentrated liquid or in dry forms. Buying it in the dried crystalline form is much more economical than the liquid form. With the liquid form you're mostly paying for water.

  TIP

  Here are some of the advantages of water-soluble fertilizers:

  - They're readily available in a wide range of formulations.
  - Because they're soluble in water, they're easily and quickly absorbed by roots and even leaves of orchids.
  - They're simple to use. You just dissolve them in water and apply them with a sprayer or sprinkling can. If the orchids are mounted on slabs or in baskets, you can dunk them in the fertilizer solution.

  The disadvantages of water-soluble fertilizers include the following:

  - The nutrients don't last long in the potting material. As a result, the fertilizer needs to be applied once every two to three weeks (or constantly if you're using a very low dosage).
  - These fertilizers, in their original containers, are very concentrated. Hence, they can damage the orchids if you don't dilute them correctly.

WARNING

The application rate or dosage of all fertilizers depends on the concentrations that are used. The safest procedure is to always check the fertilizer container for their recommended application rates. Never apply more than recommended or plant damage can result.

TIP

Here are some pointers to help you know when it's time to fertilize your orchid:

- **Fertilizing frequently at a more dilute rate is better than fertilizing less often at a higher concentration.** Some orchid growers, including me, find that feeding their orchids every time they water with a diluted amount of fertilizer works great. It's the most natural way (as opposed to the feast-or-famine routine of fertilizing at a higher concentration every two or three weeks). If you want to fertilize each time you water, with most orchid fertilizer formulations use about ¼ teaspoon (1.2 cc) of the dry crystalline fertilizer per gallon.
- **Never apply more fertilizer than the manufacturer recommends.** When in doubt apply less, not more, fertilizer. Remember that fertilizers are a form

of salt and salts were some of the earliest weedkillers, so they'll damage orchids at high concentrations.

- **Drench the potting material, several times in a row, every few weeks or so with fresh water that contains no nutrients to wash out any excess fertilizer salts.** This process is called *leaching.*
- **Look at the orchid's leaves and flowers.** Very dark green leaves that are succulent and floppy can be a sign of overfertilizing. If orchids are overfertilized, they also produce poor-quality flowers.
- **When the orchids are actively growing, fertilize them.** When they aren't, don't.
- **If the orchids are diseased and in poor condition, stop fertilizing.** Orchids only make use of fertilizer when they're healthy and actively growing.

REMEMBER

FERTILIZER DEPOSITS ON POTS

As water evaporates from the potting material in the pots, it leaves behind any solid minerals or salts that were dissolved in the water, including fertilizer salts. These salts can accumulate on the edges of the pots. When this salt crusting is noticed, remove it with a damp cloth. If you don't, these deposits can burn the leaves of the orchids when they touch it.

Because clay pots are porous, they tend to accumulate more salt deposits on the edges than plastic pots do. One way to prevent this is to dip the tops of the clay pots into about ½ inch (1.27 cm) of melted *paraffin* (wax used to make candles) before potting your orchids in them.

IN THIS CHAPTER

- Selecting the right potting materials
- Choosing the best container
- Planting an orchid in a wooden basket
- Repotting orchids
- Mounting an orchid on a slab

Chapter 7

The ABCs of Potting Materials, Containers, and Repotting

If you're just starting out with orchids, the process of choosing containers and potting materials and then repotting orchids can be daunting. Orchids do have special requirements, unlike most other houseplants. But have no fear — in this chapter, I walk you through all the steps so you have the information you need. When you repot a few orchids, you'll realize that this is a very fun and rewarding part of orchid growing.

Choosing Potting Materials

Your orchids won't be happy in just any kind of potting material. In this section, I give you the inside scoop on what goes into potting material and which material is best for your orchid. I also give you some not-so-top-secret recipes for potting material so you can make your own — and I let you know what to do if you'd rather not.

Knowing your potting material options

When I use the words *potting material* in the heading for this section, it wasn't just a fancy way of saying *dirt.* It's because most orchids have roots that need more air space than soil can provide. Orchids also need potting material that drains rapidly and at the same time keeps moisture. Because orchids usually go at least a year, and many times longer, between repotting, they also need materials that are slow to decompose.

No single potting material works best for every orchid or orchid grower. In Table 7-1, I list of some of the most common potting materials used, along with some of their pros and cons.

TABLE 7-1 The Pros and Cons of Various Potting Materials

Potting Material	Pros	Cons
Expanded clay aggregate	Doesn't decompose Supplies good aeration	Heavy
Coco husk chunks	Retains moisture while also supplying sufficient air Slower to decompose than bark	Must be rinsed thoroughly to remove any salt residue Smaller grades may retain too much moisture
Coco husk fiber	Retains water well Decomposes slowly	Doesn't drain as well as bark or coco husk chunks
Cork chips	Provides good aeration Long lasting Holds no water	Floats so may be too light for some mixes
Fir bark	Easy to obtain Inexpensive Available in many *grades* (sizes)	Can be difficult to wet Decomposes relatively quickly
Gravel	Drains well Inexpensive	Heavy Holds no nutrients
Hardwood charcoal	Very slow to decompose Absorbs contaminants	Holds very little moisture Can be dusty to handle
Lava rock	Never decomposes Drains well	Heavy

Potting Material	Pros	Cons
Osmunda fiber	Retains moisture Slow to break down	Very expensive Hard to find
Perlite (medium to large grade); also called sponge rock	Lightweight Supplies good aeration and water retention Inexpensive	Retains too much water if used alone
Pine bark	Generally takes longer to decompose than fir bark	Can be a bit more costly than fir bark
Redwood bark	Lasts longer than fir bark	Hard to find
Sphagnum moss	Retains water and air Readily available	Can retain too much water if packed tightly in the pot or after it starts to decompose
Styrofoam peanuts	Inexpensive Readily available Doesn't decompose Rapid draining	Shouldn't be used alone because doesn't retain water or nutrients Best used as drainage in bottoms of pots Can be too light for top-heavy plants
Tree fern fiber	Rapidly draining Slow to decompose	Expensive Harder to find Low water retention

WARNING

Not all sphagnum moss is the same. Get the best grade that you can find that has long fibers and is very spongy, which usually comes from New Zealand. Some of the moss from the United States has short fibers and is too brittle.

Figuring out which potting materials are best

If you read the preceding section and you're thinking, "How the heck am I supposed to choose a potting material when none of them are perfect?" Don't worry. The individual potting materials are rarely used by themselves — they're usually formulated into mixtures, so the final product will retain water, drain well, and last a reasonable amount of time. Every orchid grower has his own favorite potting formulations — kind of like every grandmother has her favorite apple-pie recipe.

TIP

The combination of potting materials that will work best for your orchid depends on various factors. Answer the following questions to get an idea of what you need:

- **How often do you water?** If you tend to be heavy-handed with the sprinkling can or hose, use materials that drain well and decompose slowly, such as medium fir bark, pine bark, gravel, lava rock, expanded clay aggregate, or tree fern.
- **What type of an orchid are you growing?** Some orchids that naturally grow on or in the ground, called *terrestrials* or *semi-terrestrials,* usually prefer to be kept slightly damp all the time, while those that live in trees, called *epiphytes,* or grow on rocks, called *lithophytes,* want to dry off thoroughly between waterings. When you look at catalog listings or search for information online about your particular orchid, look for these terms to see what growing conditions suit them best, or ask the grower you're buying from.
- **How mature are the plants?** Large plants usually do best in coarser potting materials and smaller plants do better in finer potting materials. (See the following sections for potting mixes of varying degrees of coarseness.)
- **How big are the roots of the plants?** In general, smaller roots grow better in finer, more water-retentive materials like fine fir bark, sphagnum moss, fine coco chips, or perlite, while larger roots perform best in coarser materials like medium to coarse fir bark, expanded clay aggregated, tree fern, Styrofoam peanuts, lava rock or gravel.

Getting your hands on some not-so-secret recipes

Although some orchid specialists have complicated formulations for each type of orchid they grow, I simplify this process to two basic mixes that suit most orchids. The mixes are based on the texture or particle size of the mix, which is connected to the size of the orchid roots and their need for water retention. (If this sounds complicated, just read on — I let you know which mix works best for which orchids.)

TIP

Recommending specific potting mixes or formulations is a risky thing to do because there are so many opinions as to what works best. In truth, many different mixes will work. The most important thing is to match your watering habits to the potting material you use. If you are a heavy and frequent waterer (as most people are), use a more porous, well draining mix (like the ones I recommend in the following sections). If you tend to water less often, use potting mixes that contain higher percentages of some of the more water-retentive materials listed in Table 7-1.

These formulations work well for me, but you may find some other mix works better for your situation.

REMEMBER

Keep your watering habits in mind. If your orchids tend to dry out too often, use plastic pots rather than clay and use the fine mix. If you tend to be a heavy waterer, use clay pots with the coarse mix.

Fine mix

4 parts fine-grade fir bark *or* fine-grade pine bark *or* fine-grade redwood bark

1 part fine charcoal

1 part horticultural-grade perlite or small-grade expanded clay aggregate

This mix works well for smaller plants of all types of orchids, slipper orchids, most oncidiums, miltonias, and any other orchids with small roots that like to stay on the damp side.

Medium mix

4 parts medium-grade fir bark *or* medium-grade pine bark

1 part medium charcoal

1 part horticultural-grade perlite or medium-grade expanded clay aggregate

This is your middle-of-the-road mix. If you aren't sure which mix to use, try this one. This mix is also good for cattleyas, phalaenopsis, and most mature orchids.

If these mixes dry off too quicky for you, add some watering retaining materials like coco chips or shredded sphagnum moss.

If mixing your own isn't your thing

If you'd rather just buy your mix ready-made, potting mixes are readily available from most places that sell orchids, including home-improvement stores. The mixes that they sell are very similar to the ones I outline in the preceding section. Most contain fir bark, perlite, and charcoal, and are suitable for most orchids.

Getting your potting material ready to use

TIP

Whatever potting material or mix you choose — whether you mix it yourself or buy it ready-made — make sure it's wetted before you use it. Otherwise, it won't hold moisture properly and will always dry out too quickly. Here's how you do it:

1. **Pour the amount of potting material you intend to use into a bucket that has about twice the volume of the mix.**
2. **Fill the bucket with hot water.**

   Hot water penetrates the material better than cold water.
3. **Let it soak overnight.**
4. **The next day, pour out the mix into a colander or strainer.**
5. **Rinse the mix thoroughly to wash out the dust that was in the mix.**

Now the mix is ready to use.

Giving Your Orchids a Home: Potting Containers

Many different containers are on the market — some are more ornamental, whereas others have functional differences (see Figure 7-1). The most common container is the basic pot — plastic or clay.

The big differences between standard garden pots and those used for orchids are the number and size of drainage holes in the container. Orchid pots have larger holes and more of them, both in the bottom and sides of the pot, to ensure better drainage. Some are shallow and shorter than standard garden pots, with a larger base — especially useful for top-heavy orchids.

You can also plant orchids in wooden baskets, usually constructed of teak or some other rot-resistant wood (see Figure 7-2).

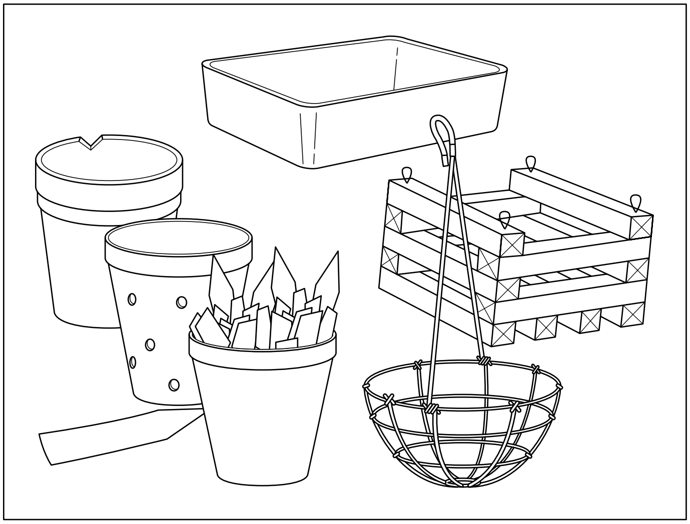

FIGURE 7-1: You can find many different types of containers for growing orchids.

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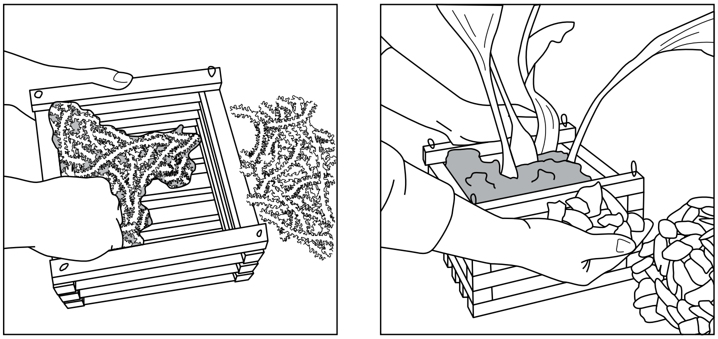

FIGURE 7-2: When potting in a basket, line the basked with sheet moss, or sheet coir (coco fiber) before adding the standard potting mix.

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REMEMBER

Consider the orchid's growth habit when determining how to repot it:

- **Monopodial:** With this type of orchid all new growth grows in one direction — vertically. Pot monopodial orchids in the middle of the pot. Examples include phalaenopsis, angraecums, and vandas.
- **Sympodial:** All the new growth with this type of orchid creeps horizontally in the pot. Pot sympodial orchids so the old growth is placed at the back of the pot, which allows the new growth to have room and grow forward in the pot.

Repotting Orchids without Fear

Most beginning orchid growers are afraid to repot their orchids. Despite their reputation, orchids are tough. After all, they were first brought over from the tropics to Europe in the holds of ships and, miraculously, many of them made it back alive! Here I give you all the information you need to repot your orchids with confidence.

Knowing when you should repot

Your orchid will tell you when it's the right time to repot. Look for these clues and situations to help you know when your orchid needs repotted:

- When the orchid roots are overflowing the pot
- When the plant itself is going over the edge of the pot
- When the potting material is getting soggy and drains poorly

The ideal time to repot most orchids is when the plant starts new growth, usually right after it flowers. With certain orchids, you'll see a swelling at the base of the plant, which is the beginning of the new lead or shoot that will form the next stem, leaf, and flowers. Figure 7-3 shows a cattleya; it should be repotted after flowering when the new roots are about 1 inch (2.5 cm) long, the new lead growth is just appearing, and the growth of the plant has reached the edge of the pot.

If you don't repot your orchid at this new-growth stage, the new roots and growths are easily exposed to breakage and the new roots won't have any potting material to grow into and, therefore, will be more likely to dry out. If the orchid plant becomes too overgrown, you'll have trouble transplanting it later without damaging it.

Orchid potting — step by step

Here I explain how to repot your sympodial orchid. Stick to these simple steps and follow along with Figure 7-4:

1. **Remove the orchid from the pot.**

   You may need to use a thin-bladed knife to circle the inside of the pot and loosen the roots.

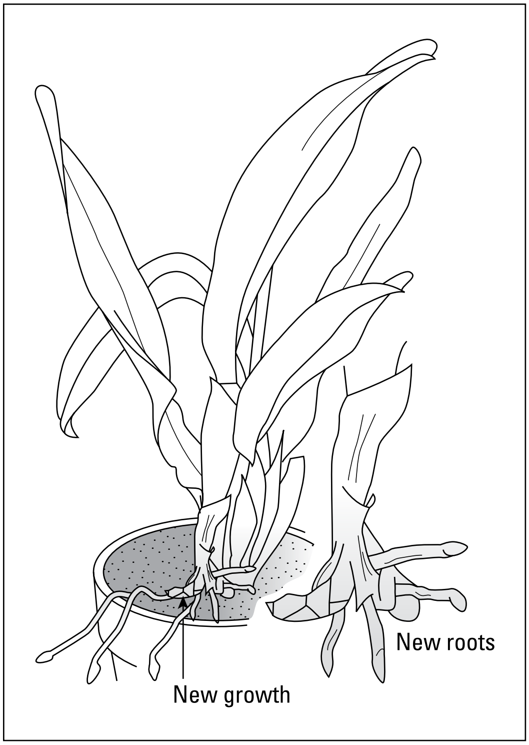

FIGURE 7-3: New roots are emerging indicating it's a good time to repot.

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2. **Remove or cut off the old, loose, rotted potting material and any soft, damaged, or dead roots.**
3. **If the roots are healthy, firm, and filling the pot, put the orchid in a pot just one size larger than the one you removed it from, placing the older growth toward the back so the new lead or growth has plenty of room.**

   If the roots are rotted and in poor condition, repot the plant in a container of the same or one size smaller than it was removed from.

   If you place a poorly rooted plant in too large of a container, the growing material will stay too damp, which will result in more of the roots rotting.

   TIP

   Some orchid growers like to add a coarse material like broken clay pots, expanded clay aggregate, or Styrofoam in the bottom of the pots to improve drainage. You usually don't have to do this if you're using shallow, azalea-type pots.
4. **Place the plant in the pot so it's at the same depth as it was originally.**

   The new shoot should be level with the pot rim.

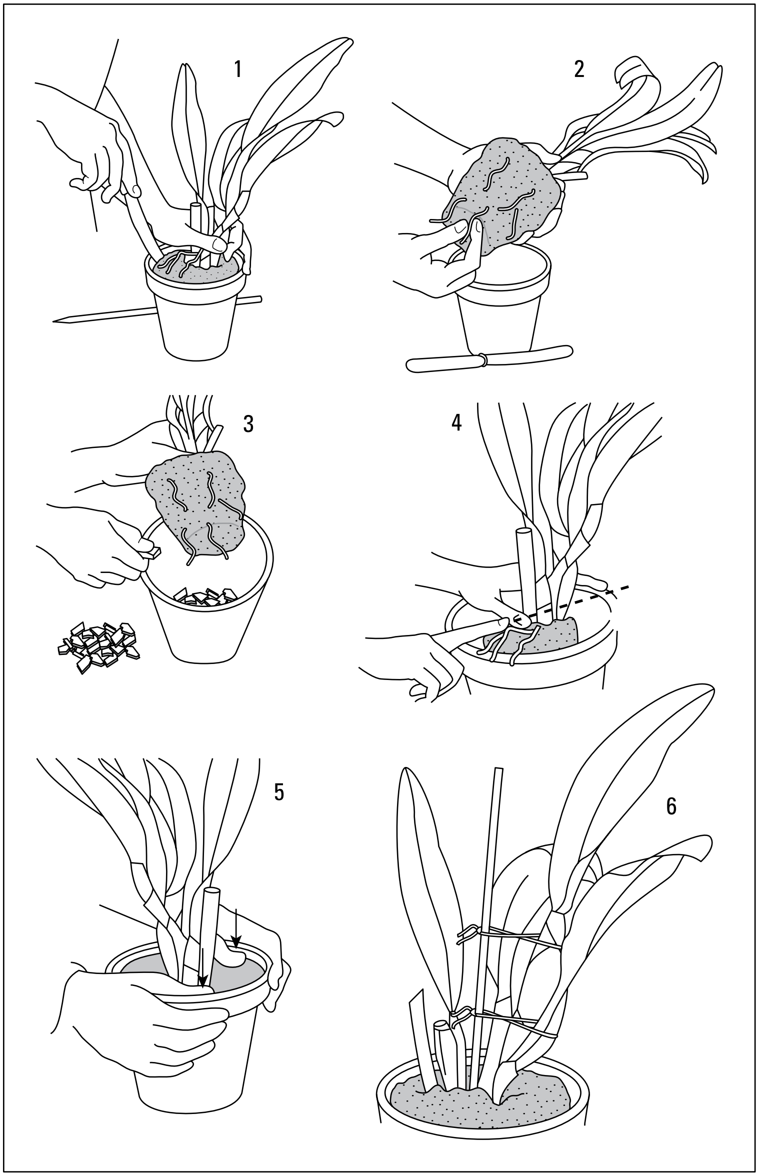

FIGURE 7-4: Potting a sympodial orchid — this one a type of cattleya.

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5. **Press the fresh potting material into the pot and around the orchid roots with your thumbs and forefingers.**

   The orchid should be secure in the pot, so it doesn't wiggle — otherwise, the new roots won't form properly.

6. **Place a wooden, metal, or bamboo stake in the center of the pot and tie up the new and old leads with soft string or twist ties.**

The potting process for monopodial orchids, terrestrial and semi-terrestrial, (see Figure 7-5) is very similar to the cattleya process (outlined in the preceding steps), except that the orchid should be placed in the *center* of the container, rather that toward the back.

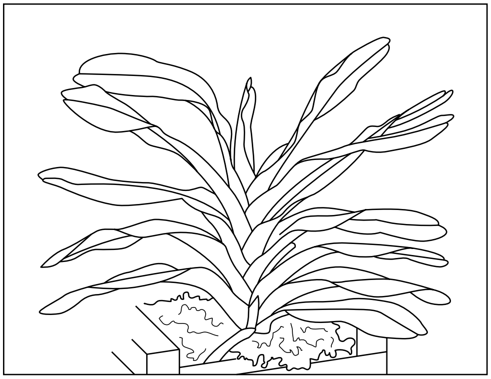

FIGURE 7-5: Pot monopodial orchids in the center of the pot instead of at the back.

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MOUNTING ORCHIDS

TIP

Many orchids that are found naturally growing in trees can be mounted, instead of placed in pots. Mounting gives them perfect drainage, simulates their natural habitat, and can be an easy way to maintain them.

To mount your orchid, follow these steps (and refer to the nearby figure):

1. **Place the plant on a small handful of moistened, squeeze-dried sphagnum moss.**
2. **Spread the roots around the sphagnum moss.**
3. **Place the orchid on the mount so its center points down for most monopodial orchids like phalaenopsis.**

   You can mount some sympodial types like cattleyas and dendrobiums with the growing point facing up.

(continued)

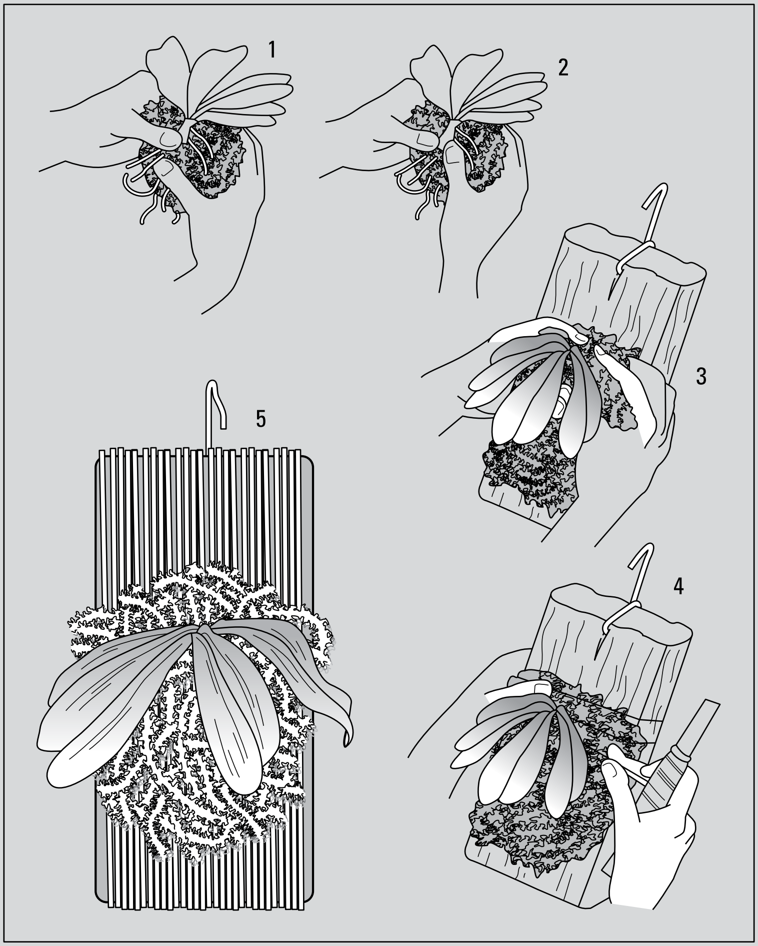
(continued)

4. **After the orchid is centered properly, wrap either stainless-steel wire or clear fishing line (monofilament) around the top and bottom of the moss to hold it in place.**

   In several months, after the new roots have taken hold, you can remove the wire or line.

5. **Hang the finished mounted orchid in a bright place in a home greenhouse or near a window.**

Because these mounts drain so rapidly, they need to be watered often, sometimes more than once a day during the hot summer months.



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IN THIS CHAPTER

- Making more orchids by dividing them
- Separating babies from their parents
- Making more orchids from cuttings
- Producing plants from back bulbs

Chapter 8

Two, Four, Six, Eight, Let Your Orchids Propagate: Multiplying Your Orchids

Because orchids are slower growing than most other plants, the process of multiplying them takes more time. To rear an orchid from seed to bloom can take as long as five to seven years or even longer! That's an exacting process requiring special equipment so I don't cover this method of propagation in this chapter.

The methods I show you in this chapter are much quicker, but they're still not as speedy as reproducing common garden plants. Multiplying your orchids is worth the effort because orchids are valuable plants that can keep growing forever.

Dividing Your Orchids

Dividing orchids is the surest and swiftest way to increase your orchids. This method only works with *sympodial-type* orchids (ones that grow sideways across the top of the pot like cattleya, shown in Figure 8-1). Just about all the orchids in this book — except for those in Chapter 10 — are sympodials.

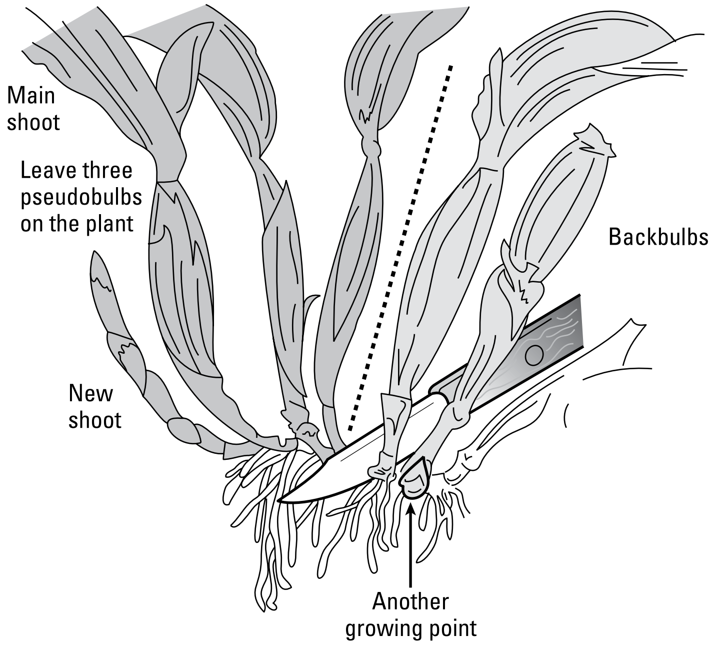

FIGURE 8-1: When dividing a cattleya, try to have at least three, or better four, front growths.

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For the cattleya types, you want to have divisions of at least three or better four growths (called *pseudobulbs*). For other types, you can divide them with fewer growths, but for best results, the larger the divisions the better.

You may want to divide your orchid because

- **The plant has grown too big to handle.**
- **You want to share or trade a piece of the orchid you have with another plant lover.**
- **The *rhizomes* (creeping stems of the orchid) are growing over each other in a tangled mess.**

When cutting the orchid plant, use a very sharp knife or pruners that have been sterilized to prevent disease spread. After you've divided the plant, turn to Chapter 7 for information on potting it.

WARNING

Don't divide your orchids when they're too small or when they don't have enough growths. The largest divisions with the most pseudobulbs will grow quickest to blooming plants. You'll always get the best blooming from your orchids when they have multiple divisions or growths.

TIP

Dividing a large orchid with many growths can be confusing. Make a drawing of the plant growth pattern on a sheet of paper, and mark where you'll make your cuts before you start doing it, as shown in Figure 8-2.

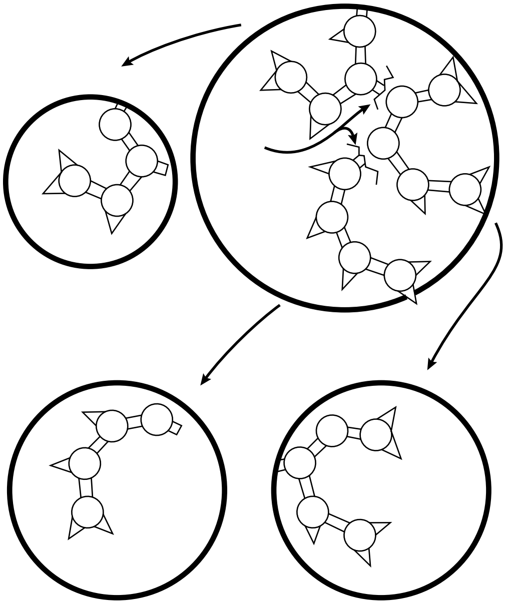

FIGURE 8-2: Making a drawing showing how a large orchid will be divided helps simplify the process.

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REMEMBER

Sometimes it's necessary or desirable to divide your orchid. But don't be in too much of a rush to divide your orchid because nothing is more glorious than a large orchid in full bloom. Larger orchids frequently bloom more than once a year for a longer duration (because the flowers can appear sequentially), and the flowers only reach their full size when the plant and its supporting roots are well established. To experience your orchid in its full magnificence, let it get as big as you can handle.

Giving Babies a New Home

Some plants, like the moth orchids, sometimes produce babies on the flower stem (see Figure 8-3). When this happens, leave these young plants on the flower stem until they've developed several roots a few inches long. Then you can cut the young plant from the flower stem and pot it following the guidelines in Chapter 7.

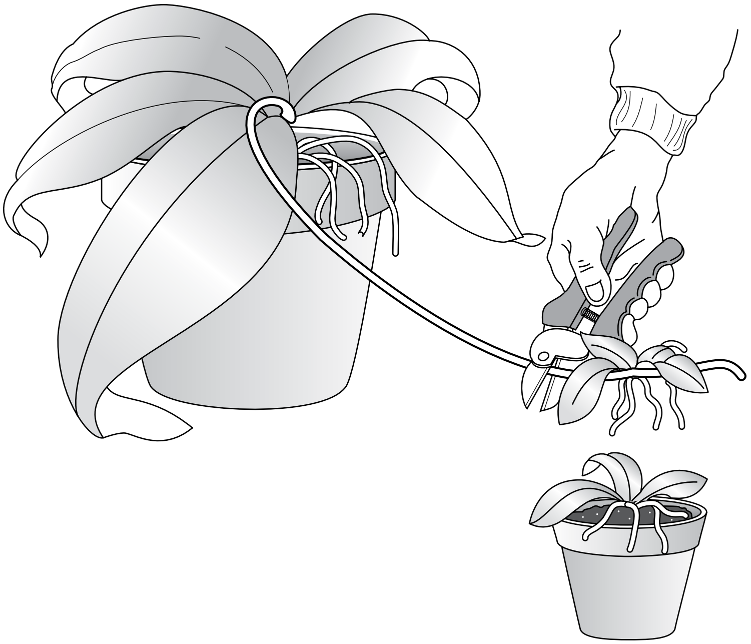

FIGURE 8-3: An orchid baby, or keiki, being removed from the mother plant and then potted.

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TECHNICAL STUFF

The Hawaiian name for baby is *keiki.* Interestingly, the orchid crowd adopted this name to refer to certain types of baby plants, specifically ones that sprout from the main stems of mature plants, which includes orchids like phalaenopsis, dendrobiums, and epidendrums.

When an orchid grows very tall and has extending roots from its stem, you can create more plants by cutting out the top several inches of the orchid stem that contains the roots and potting it (this is known as *topping* an orchid). This method is sometimes used on vandas and angraecums. The bottom half of the plant will then usually form baby plants that will sprout along the stem. These babies can eventually be cut off and planted. Figure 8-4 illustrates the three steps of topping an orchid:

1. **Remove the top portion of the stem, retaining ample roots.**
2. **Pot the portion you've just removed.**
3. **Leave the mother plant in its original container and other baby plants will sprout from its stem.**

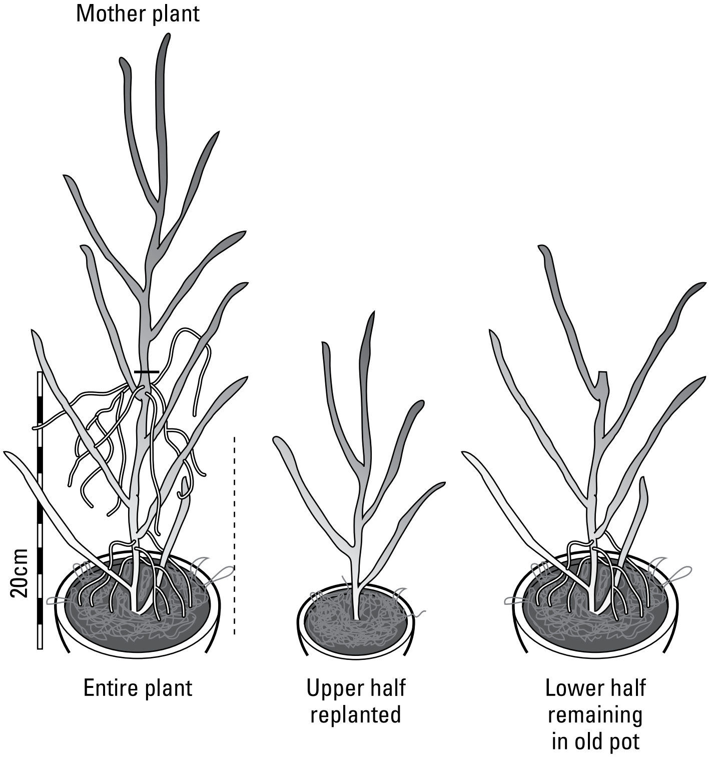

FIGURE 8-4: The three stages of topping an orchid.

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Producing New Plants from Cuttings

Some orchids have *canes*, or long stems, like some of the dendrobiums that you can cut up into pieces called *cuttings.* Here's how this works (see Figure 8-5):

1. **Cut off one of the long stems or canes with sharp, clean pruners.**

   Make sure that this is a plump healthy stem, not one that is shriveled or diseased.

2. **With a sharp, sterile knife, cut sections of the cane so that each section contains at least two nodes.**

   Nodes are the regions of the stems where the leaves used to be attached. They're marked by circular scars around the stems.

3. **Lay the cut stems or canes horizontally, half-buried, on a bed of damp sand or sphagnum moss in a shallow container.**
4. **Cover the container with glass or plastic wrap to hold in the moisture.**

5. **Place the container in a warm (70–75°F/21–24°C) area where it will get diffused but not direct sunlight.**

   About 6 inches under a two-tube fluorescent fixture would be ideal. In a few months, small plants will sprout. They can then be potted as outlined in Chapter 7.

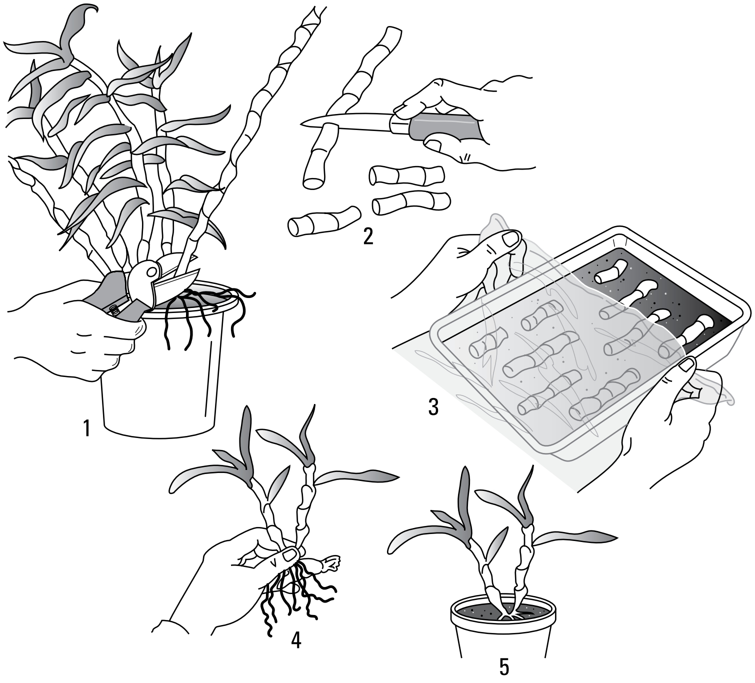

FIGURE 8-5: Producing more orchids from stem or cane cuttings.

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TIP

This doesn't work every time. Don't be discouraged if it doesn't work the first time. Just try again.

Growing Orchids from Back Bulbs

After some types of orchids, like cymbidiums and oncidiums, bloom, their older stems, called *back bulbs,* eventually lose their leaves and become lifeless looking. If you leave them in the pot, they probably won't ever produce new growth. If, however, you remove them from the main plant and handle them in a special manner, they can produce new young plants.

Here are the steps to follow (see Figure 8-6):

1. **Cut off from the mother plant the older back bulbs that no longer have leaves.**
2. **Put a 2-inch (5-cm) layer of damp sphagnum moss in a plastic bag.**
3. **Place several of the back bulbs with their bottoms about one-fourth buried in sphagnum moss in the plastic bag and seal it.**

   Put this bag in a warm (70–75°F/21–24°C) spot that receives bright diffused light, not direct sunlight. In about two months, you should start to see some new growth.
4. **When the leaves are a few inches long, place the young plants as a group in a shallow container in diffused light.**

   Let them grow for several months. Then transplant them into their own pots.

Propagating from back bulbs doesn't have a 100 percent guaranteed success rate. Always choose a back bulb that is healthy and not shriveled and hope for the best.

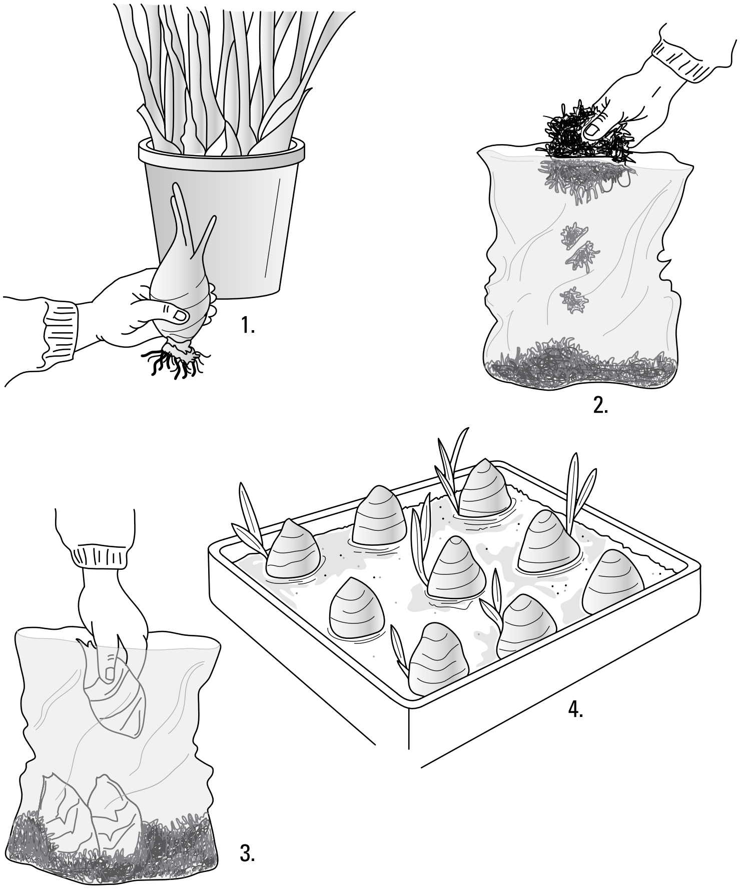

FIGURE 8-6: Growing new orchids from back bulbs.

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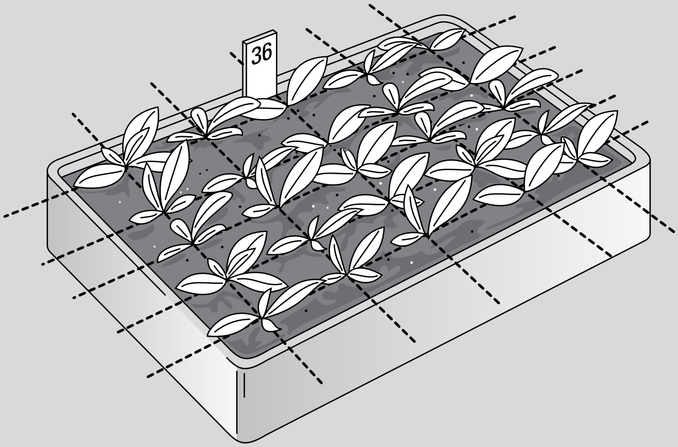
GROWING ORCHIDS FROM SEEDS: LEAVE IT TO THE PROS

Raising orchids from seeds isn't a simple task. In fact, it's quite complicated — and it wasn't until the 1920s that the professionals figured it out. The biggest problem is that the orchid seeds are *naked,* which means they don't have their own food source like most other plants. As a result, to successfully grow them, you must provide them with a nutrient solution along with a special fungus that makes this food available to them.

All this is done in laboratory flasks. The seed is incredibly small — one seed can weigh as little as 35 millionths of an ounce! They're so small that a seed pod a few inches across can hold over 100,000 seeds.

Growing orchids from seeds isn't something recommended for beginners. Leave raising orchids from seeds to the experts.

If you're really interested in growing orchids from seeds, you can try a compromise: Get small plants recently transplanted from their test tube home. They're sold as compost or community pots and have already grown for a year or more in shallow containers outside of a lab environment (see the figure). This is a fun and inexpensive way to have some extra orchids to trade or give to friends. If you're new to this, start with fast-growing types like phalaenopsis. If you're lucky, you'll see blooms in a few years.



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IN THIS CHAPTER

- Running a clean operation
- Beating bugs safely and effectively
- Diagnosing and curing diseases
- Controlling other unwanted critters

Chapter 9

Keeping Your Orchids Pest- and Disease-Free

Although orchids are relatively pest-free plants, if you have them long enough, you'll eventually have to deal with an invasion of some bug or disease. Fortunately, there aren't many pests to contend with and they aren't that difficult to identify. In this chapter, I stress the safest and most effective ways to control these problems.

Always start with the least toxic solution. If you're careful and inspect your orchids on a regular basis and detect the problems before they progress too far, you will rarely have to resort to more poisonous materials. The more poisonous materials should be your last line of defense.

Preventing Problems Before They Start

TIP

You can prevent most insect and disease problems with good plant sanitation. Here are some steps to take to prevent pest problems from getting out of hand:

- **Always sterilize your cutting tools.** See the nearby sidebar, "How to sterilize your tools," for more information.

- **Make a practice of regularly inspecting the tips of new growth, developing buds, the front and back of flowers, and the undersides of the leaves.** This is where most bugs hang out.
- **Provide the best growing conditions possible.** When orchids are under stress, they're more susceptible to disease and insect infestations.
- **When repotting, always use new or cleaned and sterilized pots.** All types of disease organisms and harmful salts can accumulate on older pots.
- **Buy plants that are clean and healthy.** Beware of the bargain or leftover plants; many have serious problems. Unless they're in excellent condition, stay away from them.
- **Don't allow weeds to infest your pots of orchids.** They can harbor insects and diseases.
- **Keep the floor or ground in your growing area free of weeds, dead leaves, and dead flowers.** Diseases and insects can hang out here.

TIP

Always isolate new orchids from your other plants for four to six weeks. During this time, scrutinize them for any signs of insects.

HOW TO STERILIZE YOUR TOOLS

TIP

I use the following two methods for sterilization:

- **Chemical sterilization:** Dilute household bleach — one part bleach to nine parts water. Soak your tools in them for a few minutes before you use them. Most chemicals that are used to sterilize tools, like bleach, are highly corrosive, so after you've sterilized these tools, be sure to thoroughly rinse them with clean water or their metal will quickly rust. Make sure that you freshen this solution regularly because the chlorine in the bleach will evaporate and will be ineffective after a day or so.
- **Heat sterilization:** This is a very fast and clean way to sterilize tools. You can use a compact propane torch, but I've found the most convenient way is to use a small butane hand torch (see Chapter 3) like the ones sold to make the crust of crème brûlée. With these torches, you merely flame the tool on the cutting edges until they get red. Let the tool cool, and it's ready to use. This method won't cause any damage to your tools.

Besting the Bugs

The most important aspect of pest control is vigilance. Frequently, people say, "I don't know where these bugs came from! All of a sudden my orchid was infested with them!" Well, I'm here to tell you that this isn't the way it happens. Even though most insects do reproduce faster than rabbits, infestations don't happen overnight.

REMEMBER

Things can get out of hand quickly, though, if you don't make a point of closely inspecting your orchids regularly. Keep on the lookout because if you can detect the pests when they're in small numbers, getting rid of them will be much easier. And as soon as you see one pest, more than likely this unwanted creature has already laid eggs so more critters will show up soon.

TIP

The American Orchid Society has some great information and images of common orchid ailments. Check out `www.aos.org/orchids/orchid-pests-diseases.aspx`.

TIP

Many of the pests I describe in this chapter, like mites and thrips, are very tiny, so they're difficult to see with the naked eye. Buy yourself a 10x hand lens. It'll make the task much easier. In these sections I discuss common pests you may encounter and how to prevent them from affecting your orchids.

Identifying common orchid pests

When you first notice pests, you need to identify them promptly and properly so you can be sure to apply the most effective control. In the following sections, I describe the common orchid pests. In the section, "Finding safe and effective pest-control measures," later in this chapter I tell you what to do if your orchid has them.

THROWING YOUR SICK PLANTS AWAY — ORCHID EUTHANASIA

TIP

Sometimes the best solution is to dispose of a sickly orchid. If you've tried the preventive and curative measures that I outline in this chapter and still the orchid doesn't seem to be recovering, or if the infestation is beyond control, getting rid of it is the best solution. When a plant becomes too weakened by infection or a bad infestation of insects, it isn't likely to recover — and although you're hoping this will happen, the infested plant can spread its problem to your other healthy orchids. So, bite the bullet and bury it in your trash can! Don't compost this plant because it could be a carrier of diseases or insects.

In many cases, especially if many pests are present, you'll have to apply control measures repeatedly, every seven to ten days, at least three times. This is because these creatures have laid eggs that are resistant to the control measure and hatch later. By repeating the control several times, you'll kill these next generations of pests after they emerge from their eggs.

Aphids

These are probably the most ubiquitous insect pests of them all. Aphids come in all colors — including green, red, pink, black, and yellow — and they're usually found on the new, succulent growth including the flower buds (see Figure 9-1). They feed with syringelike mouth parts and are particularly damaging to buds by causing them to be deformed when they open. Aphids are also very effective carriers of disease, especially viruses.

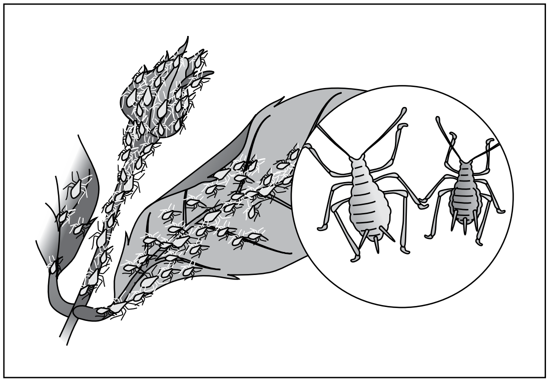

FIGURE 9-1: Aphids are usually found in clusters on flower buds and young shoots and leaves.

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TIP

If you see sticky clear droplets anywhere on your plant, look out for aphids. This material, euphemistically called *honey dew,* is aphid waste. This sticky substance can also be excreted by any other piercing/sucking insect, such as scale.

Mealybugs

The name of this creature pretty much describes what this insect looks like — mealy or cottony masses (see Figure 9-2). It's found in similar areas as aphids — the growing tips, buds, and flower stems. Mealybugs are one of the most common and destructive insects for many orchids. One type in particular is found on the roots.

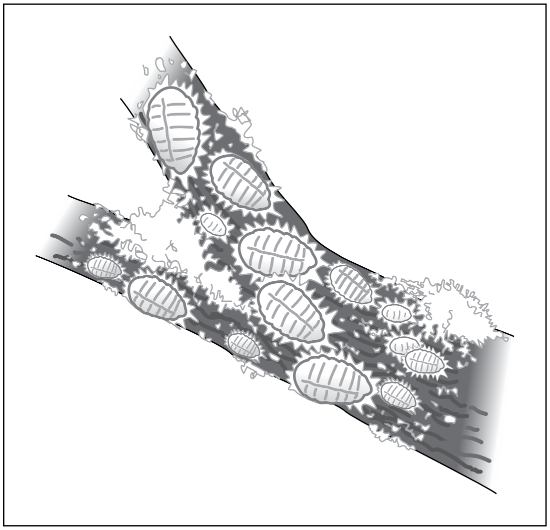

FIGURE 9-2: Mealybugs look like white cottony masses.

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Because these bugs are a fuzzy mass, they're frequently misdiagnosed as being a fungus. This bothersome pest usually needs multiple insecticide treatments to get rid of it. Any orchid grower that says they've never had this pest is either not observant or very lucky.

Thrips

Thrips can be very destructive, especially to flower buds, maturing flowers, and young leaves. They're miniscule buggers that look something like long gnats and are very difficult to see with the naked eye. Their damage is easier to detect — it shows up as light streaks on the flowers or stippling on the leaves. They usually deform the flower buds.

Scale

This is another creature that comes in various forms, but most have a shell that serves as a type of armor for the soft insect body that is protected by it (see Figure 9-3). This shell must be penetrated by a chemical or by rubbing it off before you can kill the insect. They're frequently found on the undersides of the leaves near the middle vein of the leaf or on the edges of the leaf. They also commonly hang out on the flower stems. This is a very difficult insect to totally eradicate, but with persistence, it can effectively be controlled.

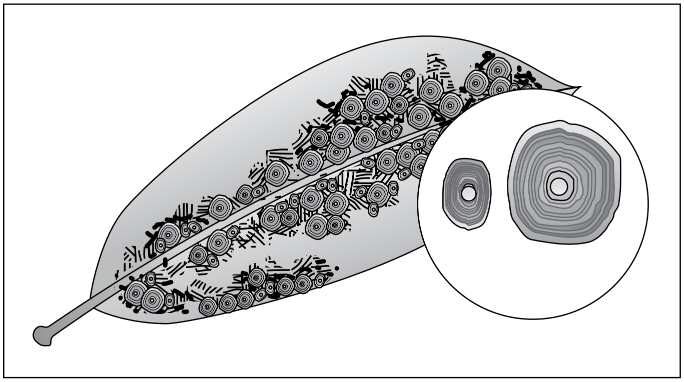

FIGURE 9-3: Scale is a very common pest on orchids.

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Spider mites

Spider mites aren't insects but are spiders (see Figure 9-4). They're often found when growing conditions are hot and dry. They can be green or red, but in any color they're very difficult to see because they're so small, so that's where a magnifying glass is handy to confirm their identification. In extreme infestations, you'll see fine webbing on the leaves. Before the infestation gets this bad, the foliage will take on a stippling effect, which is a result of their feeding.

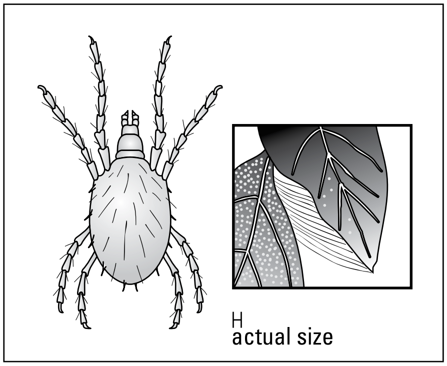

FIGURE 9-4: Spider mites are very small, hard-to-see pests that can be very destructive.

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Slugs and snails

Snails and slugs (see Figure 9-5) head most people's list as being one of the most revolting of all orchid pests. They can do extensive damage to young orchid roots and stems and developing and maturing flowers. They usually come out at night, so if you suspect them, take a flashlight in the evening to search for these culprits. Also, look on the bottom of the flowerpots — this is another favorite hiding place. They love cool, damp spots. If they travel across dry surfaces, they'll leave a telltale slime trail.

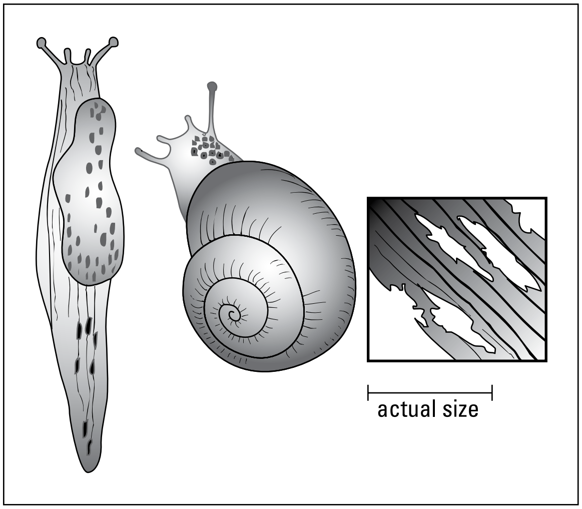

FIGURE 9-5: Snails and slugs eat holes in flowers and leaves at night.

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Cockroaches

Another very unpopular beast, cockroaches also feed at night and enjoy munching on flowers and flower buds. You don't need an illustration to identify this one!

Mice

More than once, to my great consternation, upon inspecting my plants in the morning, I discovered that a creature had nibbled off the flower buds of some of my prized beauties right before they opened! Oh, how frustrating! Luckily, mice can be easy controlled.

Bees and other pollinating insects

These aren't harmful creatures — they don't cause any physical damage to orchids, but if they land on the flowers and pollinate them, the flowers will very soon collapse. So, if you want your flowers to last the longest, keep pollinating insects out of your growing area.

Finding safe and effective pest-control measures

Many of the chemical controls for insects and diseases can damage the plants to which they're applied if they're misused. To be on the safe side, always read the pesticide label to see if orchids are listed as a plant that this chemical should *not* be used with. And when applying the pesticide, never use more than the dosage recommended and apply it in the cool of the early morning. Also make sure that the potting material is damp — a moisture-stressed orchid is much more easily damaged by pesticides.

The pest-control methods in Table 9-1 are listed in their approximate order of safety and are readily available. You can use several other pesticides, but I keep it simple and give you the most effective and safest controls. Always start with the first line of defense. Some of the least toxic solutions must be applied more frequently, because they kill on contact and aren't residual (they don't stick around after they're applied). Most don't smell bad — an important feature for homegrown plants. Some, like Orange Guard, also serve as pest repellents (which means they'll kill the pests currently there and repel future pests).

TABLE 9-1 Common Orchid Pests and Their Controls

Pest	First Line of Defense	Second Line of Defense	Comments
Aphids	Wash off with warm water.	Insecticidal soap Orange Guard (orange oil) All-Seasons Horticultural oil Isopropyl alcohol applied with cotton swab	If aphids are on the flower buds of orchids, try repeatedly washing them off with warm water. Using any chemical may damage the delicate developing buds or flowers.
Mealybugs	Physically remove as many of them as possible with a soft toothbrush. You can also use a cotton swab drenched with isopropyl alcohol.	Insecticidal soap All Seasons Horticultural oil Neem For serious infestations consider using a systemic insecticide like Orthene (Acephate).	For orchids with mealybugs on their roots, remove the orchid from the pot, soak the roots in a solution of insecticidal soap for a few hours, and then repot in a clean new pot with new potting material.
Thrips	Neem Horticultural oil Insecticidal soap	Malathion Orthene	Malathion and Orthene are effective on a broad range of insect problems, but they both reek, so be sure to apply them outside of the living area.
Scale	Use a cotton swab drenched with isopropyl alcohol and wipe across the armored shell of this insect. Make sure that you penetrate this shell. Orange Guard	Insecticidal soap Neem All-Seasons Horticultural oils	This pest is difficult to eradicate. Apply controls repeatedly to get rid of it. Before I spray, I usually try to rub off the armored shells of the scale with my fingers or a soft toothbrush, and then I wash the leaf with mild soapy water and spray with my chosen control.

Pest	First Line of Defense	Second Line of Defense	Comments
Spider mites	Wash off with a strong stream of warm water.	Insecticidal soap All-Seasons Horticultural oils Orthene	To prevent mite infestations, keep your orchid properly watered and in a growing area that isn't too hot or too dry.
Snails and slugs	Old beer-The yeast in beer is a strong attractant to snails and slugs. Put out a shallow platter of beer (about ½ inch deep) and wait for these creatures to belly up to the bar at nightfall. The next day, you'll find them drowned in the brew. Put out pieces of lettuce in the evening that will attract slugs and snails. This lettuce, with attached feeding slugs, can be removed and discarded in the morning.	Sluggo and other iron phosphate-based baits	If you use baits, be sure that they have a low toxicity to pets, such as Sluggo.
Mice	Live traps	Old-fashioned snap traps (peanut butter is an effective bait).	I don't recommend using poison baits because they can harm your pets, and the mice that die from this poison frequently end up in the walls of your house and the smell takes weeks to dissipate.
Roaches	Orange Guard	Roach aerosol sprays — use on the floor, not on plants.	Orange Guard both repels and kills roaches. And it smells good!

WARNING

Don't spray aerosol insect controls, such as those designed for killing ants, roaches, and wasps, on your orchid plants. They're intended to be used to kill insects outdoors and in the kitchen, but if sprayed directly on your orchid plants, they can cause serious damage.

WARNING

All horticultural oils aren't the same. Don't use dormant oils: They're meant to be used on dormant plants like fruit trees and will greatly harm orchid plants. Use the ones called all-season or *superior* oils. They're much thinner and more refined and are meant to be used when the plants are actively growing.

Identifying Fungal and Bacterial Infections

Orchids are tough plants, and if you grow them in the correct cultural conditions and take the preventive measures that I mention in this chapter, they'll rarely suffer from fatal diseases. Still, being aware of what can happen when things go wrong is a good idea.

Diseases are somewhat trickier than bugs to deal with because you really can't see them. You just see the damage they leave behind — such as rotten plant centers or spots on the leaves.

WARNING

The damage that most fungal and bacterial diseases leave behind are circular or oblong spots on the foliage or flowers (see Figure 9-6). Sometimes they also cause the center growing point, called the *crown*, to turn black or rot and may lead to the death of the plant. When this happens, the crown has been killed by the organism and the pattern of spots or rots is a symptom of the disease and is one of the ways that a disease is identified. Fortunately, most of the controls that I mention in this chapter are effective against a broad range of disease problems, so an exact disease diagnosis is seldom necessary to remedy the problem.

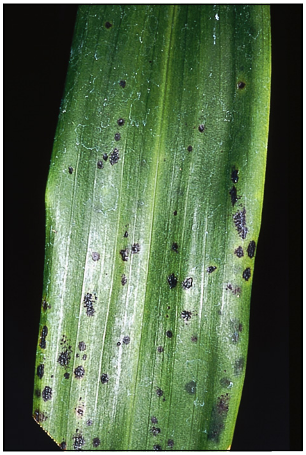

FIGURE 9-6: Leaf spots like these are usually caused by fungal organisms.

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WARNING

Viruses are dreaded by orchid growers because there is no practical cure for them. The most obvious symptom of a virus infection is streaking or color breaks in the flower. Fortunately, infections aren't common, especially if you buy high-quality plants and follow the prevention methods outlined. If you suspect a problem, home tests are available to determine whether or not your plant is infected. If the test proves positive, the best course of action is to discard this plant so the disease doesn't carry to your other plants.

The following sections helps you diagnose what your plant is ailing from.

Noticing when your orchid is sick

Detecting these symptoms is difficult. Fortunately, you can buy test kits that will do just this because commercial growers are extremely careful these days with their sanitation.

TIP

Refer to the section, "Preventing Problems Before They Start," earlier in this chapter. This information pertains as much to diseases as it does to pest damage.

Here are a few other pointers that relate specifically to preventing disease:

- **Water your orchids during the day when the moisture will evaporate from the leaves before nightfall**. Cool, damp leaves and water left in the crowns of the plants in the evening are an invitation to disease.
- **Make sure your orchids have enough airflow**. This reduces the time moisture stays on the leaves and removes stagnant air.
- **Sterilize your cutting tools each time you use them on another plant.** Tools that have cut diseased plant tissue can carry the disease to a healthy plant.

After you detect a diseased plant, do the following as soon as possible:

- **Remove diseased leaves with a sharp sterile knife or scissors.** (See the sidebar, "When surgery is required," later in this chapter.)
- **When you find a disease problem, treat it right away.** Procrastinating could cost your orchid its life.

Handling a sick plant

As soon as you expect that your orchid plant is sick, I recommend you stick to these steps:

1. **If the plant is badly diseased, discard it.**

   You probably won't be able to save it, and it could infect your other healthy plants.

2. **If you find dark brown spots that look like disease and they're close to the end of the leaf, remove this section of the leaf.**

   Refer to the sidebar "When surgery is required."

3. **As a general sanitation practice, after you've performed surgery or if your orchid has a disease spot that can't be removed surgically, spray the leaves with a mild fungicide/bactericide and hope for the best.**

   Physan 20, Phyton 27, Natriphene, or RD-20 are all mild fungicides/bactericides that work for this purpose.

   REMEMBER

   Some folks have found that dabbling powdered cinnamon on the cut to present spread of diseases is effective.

4. **Reevaluate the area you're growing the orchid in to be sure it's getting enough air circulation and you're doing all you can to follow the recommended disease-prevention measures.**

WARNING

All chemical pesticides are poisons that have some toxicity to humans. Read the precautions on the pesticide label and follow them carefully.

Wear rubber gloves when mixing and spraying these materials. Just remember that not all gloves are equal. Wear chemical-resistant gloves and avoid lined gloves because they can absorb the pesticides. It's hard to wash out the pesticides, and latex gloves, such as the disposable type, generally aren't chemically resistant.

WHEN SURGERY IS REQUIRED

Performing surgery to cut out the infection is the simplest and most effective method of stopping the spread of disease. A single-edge razor blade is ideal for the job because it's extremely sharp and sterile and can be disposed of after the operation. The sharpness is important so that as little as possible of the healthy tissue is damaged in the process.

Remove all the damaged or diseased leaf by cutting the leaf off about ½ inch to 1 inch into healthy leaf tissue that shows no signs of the disease. Be careful not to cut into the diseased tissue and then into healthy tissue, or you'll spread the disease.

Some people dress the edge of the cut with a simple fungicidal material like sulfur or cinnamon.

3

The Best Orchids for Rookies

IN THIS PART . . .

Look at some gorgeous orchids that will love to have you take them home.

Choose the right orchid in order to make a big difference in your success with orchids.

Try to narrow down the large choice of orchids. With the tens of thousands of different kinds of orchids out there, selecting the ones to bring home is daunting.

Peruse many of the exciting possibilities and discover some that are easy to find and are widely adaptable to a variety of growing conditions.

Consider some hardier orchids that you can grow outside.

IN THIS CHAPTER

- **Exploring the many reasons why people enjoy growing these orchids**
- **Finding perfect starter orchids**
- **Knowing the various types of moth orchids**
- **Choosing the right moth orchids for you**

Chapter 10

Moth Orchids: The Best Choice for Beginners

Moth orchids (called phalaenopsis) offer everything that most orchid growers admire and are the fastest and easiest to grow. They bloom for a long period of time — from many weeks to months. The flowers are classy and borne on elegant arched sprays. And moth orchids come in a broad range of colors. Their foliage is beautiful glossy green or marbled, they have very modest light requirements, and they grow well in temperatures commonly found in the home.

Moth orchids are definitely the orchids to start with, and after you experience the great satisfaction that they provide, you may decide to stay with them. The standard pink, white, and striped ones commonly sold in the box stores and at flower shops are the essence of style, but in addition to these beauties, there are many new and exciting colors, color patterns, and growth habits that even increase their desirability. Although most aren't fragrant, some are.

This chapter deals with this most popular type of orchids. After reading through this chapter, you'll discover why this type of orchid takes the prize for the one that most folks grow and admire. To get a sampling of the colors available in the phalaenopsis hybrids, check out the color insert.

Examining Why People Grow Moth Orchids

Moth orchids are by far the most popular type of orchid grown today and account for most orchids purchased today. It's no wonder because they're so easy to grow and their gorgeous flowers last for months, which makes them the first-choice orchids for beginners to orchidophiles, whether they grow them in greenhouses, windowsills, or light gardens.

It hasn't always been this way. During the Victorian times in England, when most orchids were the rage, they were hardly on the radar. Because these orchids have succulent leaves, they were more perishable than some of the other orchids, so they were very difficult to transport safely from their tropical climes to the greenhouses of England and Europe. During that time period cattleyas, oncidiums, and other tougher orchids ruled the orchid market.

With improved and speedier transportation and superior growing techniques that produce better quality plants faster, the tides have changed. Now they're found everywhere — big box stores, specialty growers, orchid shows, garden centers, botanical gardens, orchid societies, and mail-order.

The following sections focus on the reasons why moth orchids are popular and how hybridizing has made them even more popular.

Understanding why they're so popular

You may be wondering what makes moth orchids more popular than other species. Here are some key reasons:

- They're easy to grow.
- You can start with standard hybrid phalaenopsis that any newcomer can be wildly successful with.
- They cost less than they ever have.
- Some emit delicious perfumes.
- Because of the huge diversity of moth orchids, you'll never tire of them.
- They don't require an expensive greenhouse to grow. They'll be happy with a windowsill or artificial light setups.
- They'll beautify your home and life.
- They can live for a really long time.

Making them even more appealing: Hybrid moth orchids

Most everyone is familiar with the supremely elegant white, pink, and striped hybrids, but in the last several years a revolution in moth orchid (phalaenopsis) breeding has occurred, resulting in an entirely new, diverse, and wonderful array of moth orchids that display flower colors and patterns unimaginable just a few years ago. Now these sensuous flowers come in all shades of red, orange, yellow, and dark purple. The harlequin types with their unpredictable but always delightful patterns of color have opened a Pandora's Box of color patterns with seemingly endless possibilities.

One complaint that some orchid lovers have voiced about moth orchids is that they may be beautiful, but they don't have fragrance. Not true! Some species are wonderfully fragrant, and these have been used as parents to produce an entire new array of sweet-scented hybrids.

Many of the newer hybrids have very compact growth habits so are better suited for space-challenged orchid lovers who grow their plants in windowsills and under lights culture. These same varieties are frequently characterized by having many flowers on branched flower spikes so they produce a lot of flower power and are frequently referred to as *multifloras.*

Another great factor about moth orchids is that they thrive in indoor climates that well suit humans, especially with the hybrids. Their temperature, ventilation, humidity, and light requirements are ones easy to provide without making any radical changes in our own living preferences. You don't need a greenhouse to grow these beauties to perfection. In fact, today many more of these orchids are grown in windowsills and under lights than in greenhouses.

These orchids have come to represent the ultimate in grace and glamour and appear as an elegant accessory on furniture in fashion magazines, upscale restaurants, and shopping malls.

Moth orchids have even become part of today's "throw-away" society. Especially in parts of Europe, but also in the United States, the simple varieties of moth orchids are so inexpensive (less costly than a bouquet of flowers) that people sometimes purchase them as an object for decoration that they discard in a month or more after the last blossoms have faded.

Moth orchids face a bright future because they're so easy to grow, are very reasonably priced, and their flowers of myriad and glorious color patterns are so long lasting that their popularity sees no signs of waning. In fact, with the new flood of exciting new hybrids constantly being introduced, more than likely moth orchids will keep their crown of being the most popular, favorite orchid for the foreseeable future. Growing moth orchids will provide you the ultimate horticultural experience and pleasure.

Mirror, Mirror on the Wall: The Beauty of Moth Orchids

Moth orchids are beautiful plants, and in this section, I fill you in on exactly what to expect from your moth orchids.

The Leaves

All the moth orchids have handsome foliage. Many of them have dark-green, leathery, glossy leaves, while others exhibit exquisitely marbled dark-green and gray-green leaves, so even when these plants aren't in bloom, they remain quite attractive (see Figure 10-1).

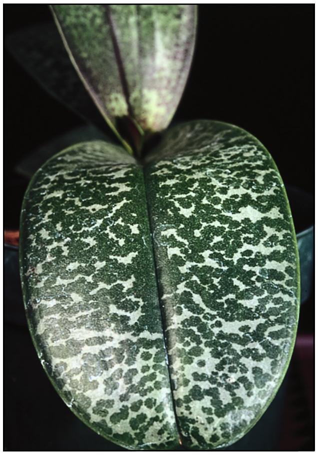

FIGURE 10-1: A close-up of the beautifully patterned leaf of *Phalaenopsis stuartiana.*

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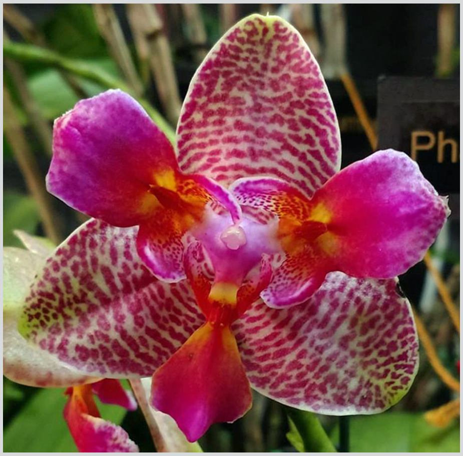
The flowers' shapes

The various types of moth orchids have very similar shapes, though many of the newer varieties have a very rounded look. Figure 10-2 shows you the names of the parts of the moth orchid flowers. Because moth orchids epitomize style, they're frequently used in flower arrangements and in simple, yet chic, corsages.

COMPREHENDING WHAT A PELORIC FLOWER IS

A *peloric* flower is a flower that has its two normal petals take on colors and markings strongly resembling the lip. Some people admire this mutation as a beautiful, albeit odd, gift from nature; others dismiss it as a freak that should be discarded. The term *pelora* is derived from the Greek word *pelorus,* which is translated as *monstrous.*

Normally shaped flowers can occur on the same *inflorescence* (cluster of flowers on the flowering stem) if the growing points gain or lose chromosomes. Although this can sometimes occur from the cloning process or may be accentuated by cold stress, an odd number of chromosomes in the plant's makeup is the usual cause. Hybrids using *Phalaenopsis equestris* as one of the parents have more of a likelihood of producing flowers. See the following figure for an example of a moth orchid with a peloric flower.



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Flower colors

White, pink, and candy-striped are the standard moth orchids that are most commonly found at flower shops and box stores as both potted plants and cut flowers for weddings. These colors of moth orchids seem to have reached the pinnacle of perfection in flower size and shape and, because of modern reproduction and growing methods, they're highly affordable. In fact, in Europe and certain large urban centers in the United States, they're commonly purchased as an expendable blooming potted plant that is discarded after its many weeks of bloom.

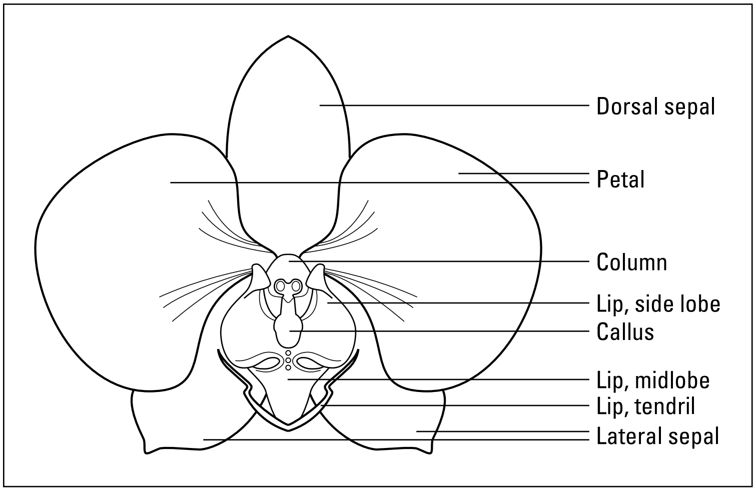

FIGURE 10-2: The parts of a moth orchid (phalaenopsis) flower.

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Round, pristine-white flowers epitomize the elegance and look of moth orchids. The white species, *Phalaenopsis amabilis* was the first one in this genus to be described. Most of the earliest white types that were grown and displayed were the species *Phal. amabilis*, *Phal. stuartiana* (refer to the section, "Answering the call of the wild," later in this chapter)*, Phal. aphrodite*, and *Phal. sanderiana*.

Through breeding the standard whites have reached such a perfection in size, shape, substance, and texture that it's difficult to imagine how they could still be improved. Just about all white moth orchids available today display pristine, round, graceful flowers (see Figure 10-3).

The following sections examine some of the wide array of colors you'll encounter in moth orchids. Within these groups there are many variations, shades, and hues. Orchid breeders are producing new flower colors and patterns on a constant basis.

Semi-albas

Semi-alba (white with colored lip) moth orchids followed a similar time frame of development. Unfortunately, breeders didn't have as many species to use as parents that were white with darker colored lips. Some of the earliest breeding efforts used *Phalaenopsis equestris* var. *rosea* and a natural hybrid with this species Phalaenopsis Intermedia (Phal. *aphrodite* x Phal. *equestris*).

Growers in Hawaii, Florida, and the western and midwestern United States as well as French phalaenopsis breeders in the 1950s, 1960s, and 1970s bred these orchids. They selected some forms of species with darker lips like *Phalaenopsis equestris* (the "*rosea*" form), forms of *Phalaenopsis* x *intermedia,* and *Phal. lueddemanniana.*

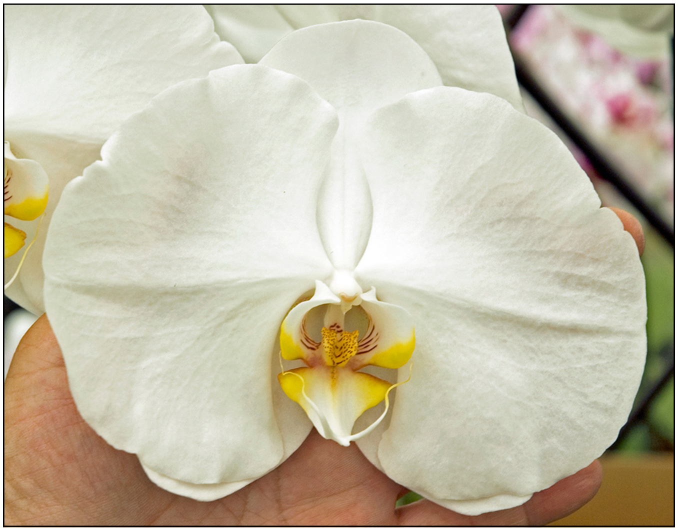

FIGURE 10-3: *Phalaenopsis* Cygnus 'Renaissance.'

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Many orchid growers would agree that by the 1980s large flowering semi-albas had reached their zenith. Although somewhat newer and superior ones continue to be produced, the leaps in improvement are incremental. Interestingly, like the solid whites, many breeders of semi-albas are now working more on producing multifloras with smaller, but more flowers on compact growing plants, instead of larger flowered hybrids on standard size plants.

Striped and spotted white moth orchids

Striped moth orchids are sometimes referred to as *peppermint* or *candy-striped phalaenopsis* (see Figure 10-4). They have white flowers with stripes of dark pink or red that vary in the intensity, number, and thickness of the stripes. Most of them are descended from *Phalaenopsis lindenii,* because it's one of the few species having striped flowers. Later, *Phal. lueddemanniana*, another one with barred flowers, was added to the genetic mix. Other species playing more minor roles in the phalaenopsis striping are *Phal. fuscata* and *Phal. javanica*.

Today's hybrids that have much larger flowers and are much more prominently striped have surpassed older hybrids that were once considered such high breeding accomplishments in their time. The Taiwanese have been recently introducing some very superior striped hybrids.

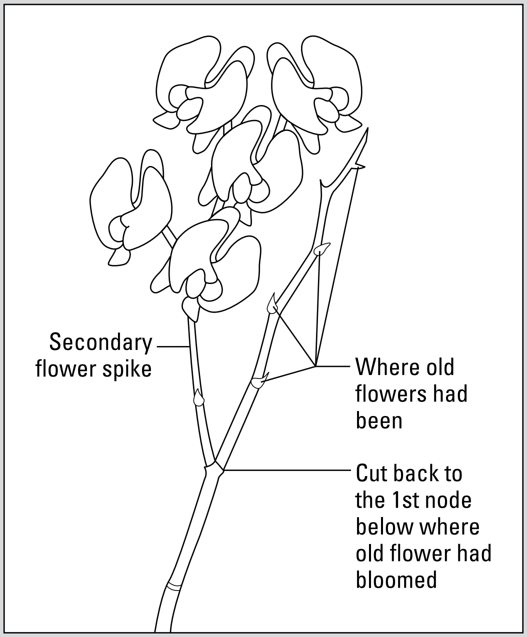
The judging standards for these hybrids are similar to the standards for white moth orchids (refer to the section, "Judging White Moth Orchids," later in this chapter). Some judges prefer those hybrids that display up to 20 flowers with similar shape, substance, and textures as the whites. The markings should be distinct and sharp.

ENCORE! ENCORE! A SECOND SHOW

One of the great features about moth orchids is their ability to produce a secondary flower spike that branches off the main one (as shown in the nearby figure). This will make your flower show go on for months!

To make this happen, after the flowers have stopped blooming on the flower spike, feel along this bare spike and notice the bumps along this stem. These knobby structures are called *nodes.* At the base of these nodes are resting flower buds. Your mission is to wake up one of these buds so it will produce another flower spike. Notice where the first flower opened on the stem, and go to the next node down, toward the base of the plant. Cut off the spent flower spike there. Doing so, in most cases, will stimulate the production of a secondary flower spike at this node.

Remember: Don't bloom your moth orchids to death! Sometimes moth orchids don't know what's good for them. They just keep blooming to the point of exhausting all their energy. If the orchid is a robust plant, this continual bloom is okay. But if the leaves are puckered and the plant looks worn out, or if the plant is very young and not very established, you're better off cutting off the flower spike and enjoying it in a flower arrangement. This will give the plant rest and an opportunity to put its energy into producing new roots and leaves so it will be strong enough to produce even more flowers on its next flowering.


Secondary flower spike
Where old flowers had been
Cut back to the 1st node below where old flower had bloomed

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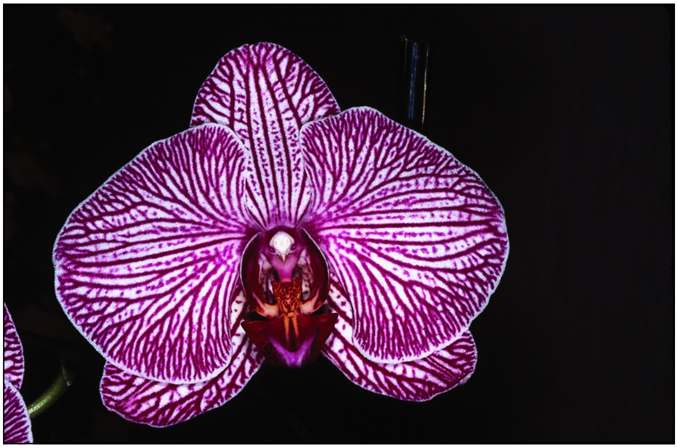

FIGURE 10-4: Candy-striped moth orchids like the *Phalaenopsis* Jackie Debonis are striking.

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For a glimpse of a gorgeous striped phalaenopsis, see *Phalaenopsis* Taisuco Chianfang in the color insert.

Spotted white moth orchids

The French, specifically the firm of Vacherot and Lecoufle, made the commitment to make spotted hybrids shine. As a result, for a while all fine spotted hybrids were called "French Spots."

Spotting was also introduced to white flowers via *Phal. lueddemanniana*. The markings on some of the earlier hybrids tended to not be as strong as those produced with *Phal. stuartiana*. (Refer to the section, "Answering the call of the wild," later in this section for an example of a *Phal. stuartiana.)*

In more recent times the Taiwanese have dominated the breeding and introductions in this group so much that the moth orchids are frequently referred to as being "Taiwanese Spots." The Taiwanese hybrids differ from the French in that the flowers are generally smaller, have heavier substance, and denser spotting.

Interestingly the spotted species and hybrids were important as forerunners to today's wildly popular harlequin hybrids. The species include *Phal. amboinensis*, *Phal. fasciata*, *Phal. gigantea*, and *Phal. leuddemanniana.*

Pinks

Most early pink moth orchid hybrids started off using the species *Phal. schilleriana* and *Phal. sanderiana* as parents for their desirable flower color. Pinks started reaching the flower size of whites with better shape and color distribution. Progress toward larger more intense flowers and an even distribution of color continues today.

For a breathtaking example of a sumptuous dark pink hybrid, see *Phalaenopsis* Ruey Lih Beauty in the color insert.

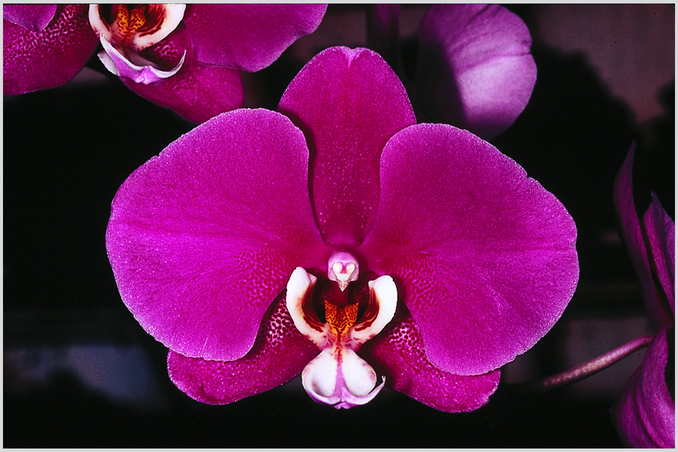
Yellows and oranges

Moth orchid breeders continue to have the goal of producing yellow and oranges with steadfast color and flower size equal to the white hybrids. Although they've made a lot of progress, most of the flowers today are a soft yellow that aren't as perfectly round or as large as the standard whites. Still, they are a delightful addition to any collection.

Phalaenopsis Brother Lawrence 'Montclaire' displays a sunny yellow flower as you can see in the color insert.

A PART OF THE BIG ISLAND IN YOUR HOME — THE HILO LIP PHALAENOPSIS

Moth orchids in various shades of pink with white lips are a strain called Hilo Lip Phalaenopsis named after the Hawaiian city on the Big Island. In today's parlance, any pink moth orchid with a white lip is commonly referred to as a "Hilo Lip" type of phalaenopsis. *Phalaenopsis* Hilo Lip 'Winter Frost' is a fine example of this type; it's a dark pink color with a bright white lip (see the following figure). This type isn't easy to find so they're a real treasure when you do get one. They are no more difficult to grow than any other type but for some reason this color combination is relatively rare.



Yellow flowers can also serve as be a background for a pink overlay that results in a delicate pastel flower like *Phalaenopsis* Raymond Burr 'Tahiti Sunset,' which you can see in the color insert.

Red moth orchids

Red is a welcome addition to the color range of moth orchids. This quest for red continues to be quite a complex and convoluted one not without quite a bit of dissension among breeders concerning what constitutes a good red because there are so many shades of red. The hybrids of today have reached a high standard of strong, lasting color, good form, attractive flower presentation, and excellent substance.

In general, the flowers aren't as large as the whites and pinks, nor do they have as many flowers, but orchid breeders are rapidly improving on both these scores. Although many breeders gravitate toward larger moth orchids with bigger and more flowers, some moth orchid hobbyists are interested in smaller flowered plants with a compact growth habit that are sometimes fragrant and are ideal for a smaller growing space like in windowsills and under lights.

See these two red beauties in the color insert. *Phalaenopsis* Sogo Grape 'Fireball' AM-AOS is brilliant glossy red whereas *Phalaenopsis* Pylo's Sofia 'Peter's Pride' HC-AOS is a softer rose-red.

Harlequin moth orchids

Harlequin moth orchid hybrids have some of the wildest and most unpredictable flower color patterns in the entire orchid world (see Figure 10-5 for an example). Another unique quality is that flowers on the same plant are all slightly different in their markings. Some of these variations from flower to flower are caused by environmental conditions whereas others are attributed to complex genetics.

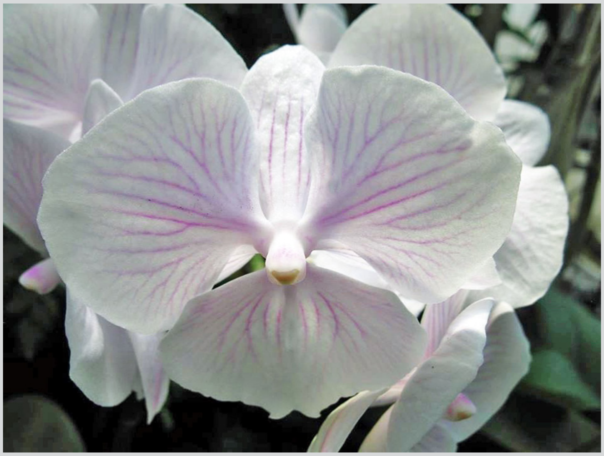
There are so many variation patterns in this group that you could grow only this type and you'd a have a fascinating and varied collection. Here are a couple in the color insert to feast your eyes on: *Phalaenopsis* Fortune Saltzman 'Maple Bridge' and *Phalaenopsis* Minho Princess.

REMEMBER

Environmental factors can have a dramatic effect on flower color. These factors include temperature and light levels in which the plants are grown, especially during flowering. When temperatures are warmer (above 80°F [26°C] or so) as the flowers are forming, the pigmentation of the spotting and overall flower color is usually fainter; when the light is brighter the spots tend to be smaller.

NO CHAPSTICK NEEDED: BIG LIP MOTH ORCHIDS

Recently this type of moth orchid has entered the scene with great fanfare. It's main distinguishing characteristic is that the lip of the flower is about the same size as the petals, which makes for a flower that seems larger and stands out from other moth orchids. Some growers think these flowers resemble pansies. Expect to see more of these types (see the following figure) showing up in the market with more colors and combinations.



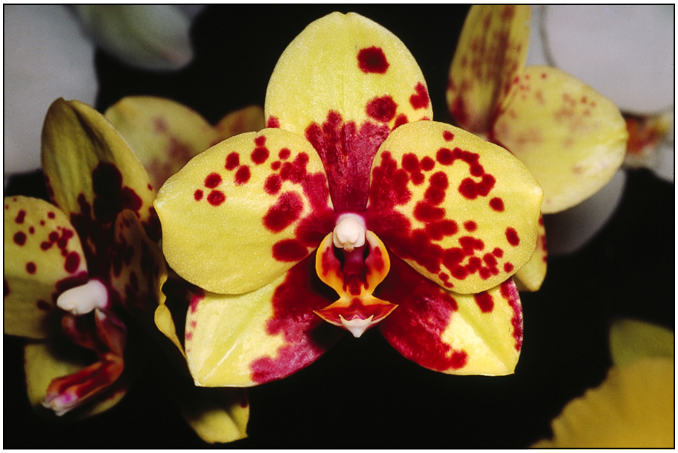


FIGURE 10-5: A harlequin-type of orchid, *Phalaenopsis* Sue Chin.

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Scents

Few beginning orchid lovers realize that some moth orchids are blessed with a wonderful perfume. Certain moth orchids from the wild naturally have this characteristic and, when they're used as parents, they sometimes pass this quality on to their offspring. In this section, I give you lists of some specific varieties to look for.

TIP

When you're buying other moth orchids, check to see if any of them have these plants listed as their parents; this will increase their chances of being fragrant.

Here are some of the sweet-smelling hybrids that I've grown and enjoyed:

- ***Phalaenopsis* Ambo Buddha 'SW':** This is another contribution to the moth-orchid world from Taiwanese breeders. The colors on the 2½-inch (6-cm) flowers are dazzling. See the photo in the color insert.
- ***Phalaenopsis* Caribbean Sunset 'Sweet Fragrance':** A delightful miniature with 2-inch (5-cm) rose-red flowers that has a rose fragrance. The leaves reach about 6 inches (15 cm) long.
- ***Phalaenopsis* Dottie Woodson:** Varnished, blood-red sweet-smelling 2-inch (5-cm) flowers are produced on multiple spikes borne above handsome, medium-glossy, green foliage.
- ***Phalaenopsis* Ember 'Blumen Insel' AM/AOS:** These are 2½-inch (6-cm) glossy, waxy, solid, dark red flowers borne on thick florescence. This flower frequently blooms more than once a year.
- ***Phalaenopsis* Kilby Cassviola 'Sweet Fragrance':** Gets its spicy fragrance from one of its parents, *Phalaenopsis violacea.* It's another compact grower with glistening white flowers about 2½ inches (6 cm) across, with light-brown barring on the lower part of the flower.
- **Phalaenopsis Orchid World 'Bonnie Vasquez' AM/AOS:** There are many different forms of this classic variety (refer to Figure 10-6). Most have leathery, thick, long-lasting, glossy yellow flowers brightly marked with red or maroon spots or stripes.
- ***Phalaenopsis* Perfection Is 'Chen' FCC/AOS:** One of my personal favorites because its flat, 2½-inch (6-cm) waxy, yellow flowers are brilliantly decorated with burgundy red spots and have a clove or carnation scent.

You can find many newer fragrant hybrids. Fragrance seems to have taken on a new importance with moth orchid breeders. Sweet smelling varieties are worth searching out.

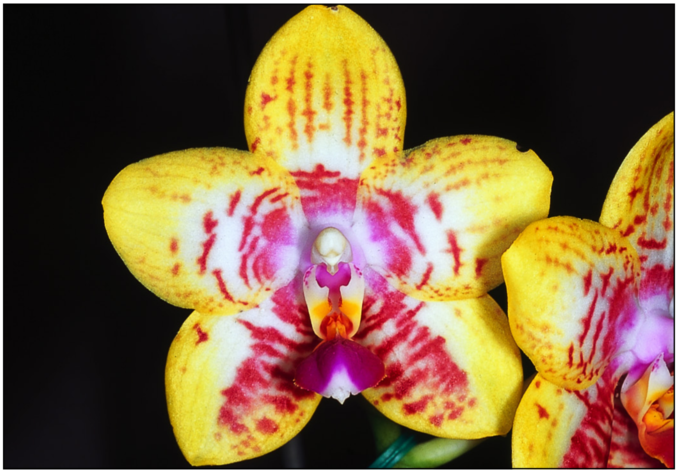

FIGURE 10-6: One of the most popular of the fragrant moth orchids is *Phalaenopsis Orchid World* 'Bonnie Vasquez' AM/AOS.

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Here are just a few other hybrids noted for their fragrance:

- *Phalaenopsis* George Vasquez 'Eureka' FCC/AOS
- *Phalaenopsis* Joy Spring Canary
- *Phalaenopsis* Luedde-violacea 'Anna Red' HCC/AOS
- *Phalaenopsis* Mitso King Star
- *Phalaenopsis* Penang Girl
- *Phalaenopsis* Princess Kaiulani
- *Phalaenopsis* Stone Dance
- *Phalaenopsis* Sweet Memory
- *Phalaenopsis* Tabasco Tex
- *Phalaenopsis* Tying-Shin Champion
- *Phalaenopsis* Tying Shin Fly Eagle
- *Phalaenopsis* Valentinii
- *Phalaenopsis* Zheng Min Anaconda
- *Phalaenopsis* Zuma Aussie Delight

Some of the phalaenopsis *species* (those in the form naturally found in the wild) are fragrant and are used in breeding to pass this characteristic to new varieties. These species are a little bit harder to find and grow but are worth the effort:

- ***Phalaenopsis amboinensis:*** Musky fragrance.
- ***Phalaenopsis bastianii:*** Floral
- ***Phalaenopsis bellina:*** A very fragrant scent of lily-of-the-valley and freesia. A compact grower whose flowers are borne sequentially (see Figure 10-7).

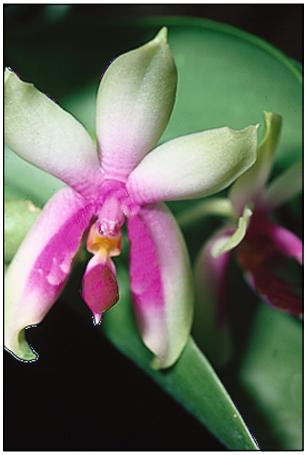

FIGURE 10-7: *Phalaenopsis bellina* permeates any room it's in.

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- ***Phalaenopsis fasciata:*** Light rosy-floral scent.
- ***Phalaenopsis gigantea:*** Huge leaves — they can be more than 2 feet (60 cm) long! The flowers are about 2 inches (5 cm) and smell like orange peels.
- ***Phalaenopsis hieroglyphica:*** White flowers with red patterns that look like hieroglyphics with a fragrance similar to a rose.
- ***Phalaenopsis lueddemanniana:*** Yellow to white flowers with dark mahogany spots that emit a light sweet fragrance.
- ***Phalaenopsis mannii:*** A Nepalese native that displays 1- to 2-inch (2.5- to 5-cm) narrow yellow flowers with dark-brown barring with a purple and white lip. Its flowers can last up to three months and have the light scent of oranges (see Figure 10-8).
- ***Phalaenopsis odesta:*** A summer bloomer from Borneo that has a creamy white flower with purple freckles smelling like honeysuckle or lilacs.
- ***Phalaenopsis schilleriana:*** An orchid with 3- to 3½-inch (8- to 9-cm) pink, lightly rose-scented flowers that can number into the hundreds on a mature plant. The dark-green foliage is handsomely marked in silver.

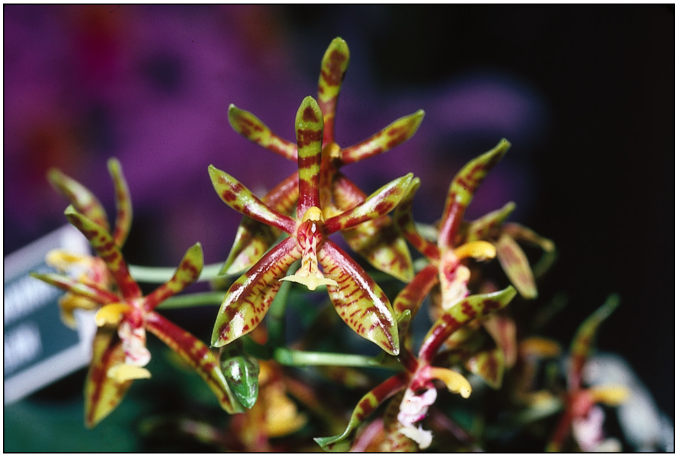

FIGURE 10-8: *Phalaenopsis mannii* is quite variable in its flower color.

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- ***Phalaenopsis tetraspis:*** Small, glossy white flowers with a strong sweet scent that are lightly marked in purple.
- ***Phalaenopsis violacea:*** A compact plant that is very fragrant, smelling like spice and cinnamon. The glossy green leaves are another attractive feature. See the color insert for a "blue" variety of this species, *Phalaenopsis violacea* 'Blue Chip.'

REMEMBER

When it comes to moth orchid flower fragrance:

- These orchids are usually fragrant during the day.
- On occasion, their scent will only last for a few hours each day.
- Sometimes the flowers have to be open for a few days before they emit a scent.
- Their perfume will be strongest on still, hot, sunny days.

Size — Small is beautiful

Some of the glorious moth orchids you see in the stores make an impressive show with their 24- to 36-inch (60- to 90-cm) arcing flower spikes, but these plants may not fit in the more limited growing space you can provide. Luckily, diminutive moth orchids thrive in smaller places. In fact, an entire group referred to as *novelties*, *minis, multiflorals*, or *sweetheart* types have many flowers up to 2 inches (3 cm) across on very compact growing plants. I've grown several of these and find them to be pure pleasure.

TIP

If space is at a premium, look for these specific plants or see if these miniatures have been used as parents in the plants that you're considering:

- ***Phalaenopsis* Be Tris:** This mini has been around quite a while. It's still offered and is commonly used as a parent to pass its small plant size on to its offspring.
- ***Phalaenopsis equestris:*** A dwarf species that is often used as one of the parents for breeding dwarf growth habits.
- ***Phalaenopsis* Carmela's Pixie:** This moth orchid is produced by Carmella Orchids, a nursery in Hawaii that has long been a grower and breeder of fine moth orchids including this diminutive one.
- ***Phalaenopsis* Cassandra:** Displays a 2½-inch (6-cm) clear white flower with a yellow flush and light-brown barring on the lower, outermost parts of the flower and throat. Some forms are fragrant.
- ***Phalaenopsis* Little Zebra:** This variety has white flowers with dramatic burgundy-red–striped flowers. See the color insert for an example.
- ***Phalaenopsis* Mini Mark 'Holm':** This plant is so charming. It has light floral-scented white flowers that are speckled in orange with an orange-red lip and that are a little over 1 inch (2.5 cm) across.
- ***Phalaenopsis* Purple Gem:** This dwarf variety most commonly comes in shades of pink and purple, but there are also white forms. It frequently blooms more than once a year. Refer to the color insert.
- ***Phalaenopsis* Sogo Twinkle:** Sogo is the name of a well-known orchid nursery in Taiwan that produces some excellent phalaenopsis including many that are small growers. See Figure 10-9 for an example.
- ***Phalaenopsis* Sogo Vicky 'Taidas Little Monkey':** Look to the color insert for a sampling of these compact-growing moth orchids that pack a lot of color in a small space.

These petite beauties have taken off in popularity. A plethora of unnamed varieties are sold in home store and grocery stores whereas the named varieties are available from specialty orchid suppliers.

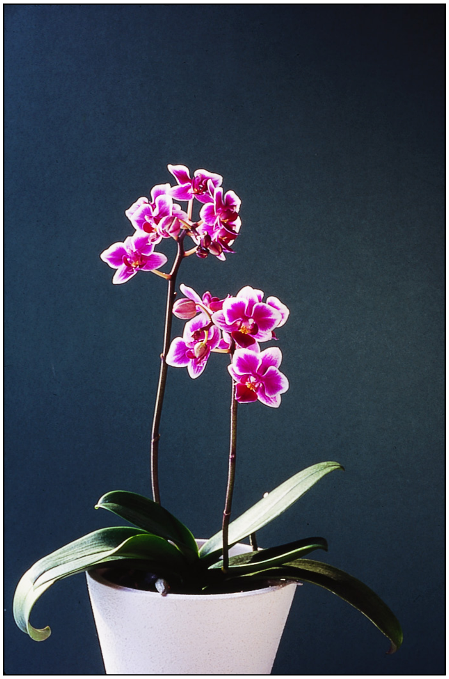

FIGURE 10-9: *Phalaenopsis* Sogo Twinkle is a compact gem that produces many charming flowers on a very small plant with short flower spikes.

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Answering the call of the wild

Here are some others that aren't as commonly grown because many people prefer the newer varieties with larger, rounder flowers, but interest in species (moth orchids as they appear in nature) has continued to increase as people start to better appreciate their simple, less complicated look.

TIP

Here are some species that are worth considering:

- ***Phalaenopsis amabilis:*** This native of Indonesia is the parent of most of today's white hybrids. The white flower with a yellow lip can last for months. It isn't as round as the newer hybrids, but it has its own grace.
- ***Phalaenopsis buissoniania:*** Unlike most of the other phalaenopsis species, this one bears its medium pink flowers on an upright, up to 3-foot (1-m) tall stem, rather than an arched flower stem.
- ***Phalaenopsis cornu-cervi:*** The flower stem on this species is flat and produces yellow, glossy flowers that are barred in maroon. Its flowers are borne sequentially, so don't cut off the flower spike because new flowers will continue to arise from it.

UNDERSTANDING WHAT NOVELTY MOTH ORCHIDS ARE

Defining what a novelty moth orchid (also known as a phalaenopsis) can be quite a challenging task because novelty moth orchids are such a varied group. In simple terms a *novelty* moth orchid is any moth orchid that isn't a standard moth orchid. In general, this group of moth orchids has fewer and smaller flowers, usually with quite heavy substance that can run the gamut of subtle to bright colors. Many of them are compact growers and aren't as complex as hybrids of the standard types. That is, they're many times primary hybrids or at least not far removed from the species. Many of the fragrant moth orchids belong to this group — fragrance is one of their characteristics that contributes to their popularity. Novelties are the most diverse category of moth orchids, containing the widest range of colors and flower types.

Although they sometimes aren't as grand as the standard hybrids in terms of flower size, they more than make up for it with their charming flowers on compact plants, making them ideal for growing under lights or on a windowsill. Because of their many endearing qualities, novelties have a special place in my collection and are among my favorites.

A moth orchid in this group possessing flowers with long-lasting, fragrant, dramatically marked flowers is *Phalaenopsis* Mituo Gigan Dragon. Another one with shiny golden yellow flowers is *Phalaenopsis* Golden Jade. See the color insert for a photo.

- ***Phalaenopsis mariae:*** The flower of this orchid is marked with bright spots of brown and red (see Figure 10-10). It will frequently have multiple, short flower spikes in the spring and summer.
- ***Phalaenopsis schilleriana:*** A parent of many of the pink hybrids sold today. Like *Phalaenopsis stuartiana,* a mature plant produces a flurry of flowers, and its leaves are beautifully marbled.
- ***Phalaenopsis stuartiana*:** A mature plant of this variety can have up to 100 white flowers on a branched spike. See the color insert for an example. The foliage is beautifully patterned.

WARNING

Don't buy wild-collected plants. They deplete the natural population of these plants from their native lands from which they've sometimes been illegally removed. Wild-collected plants take quite a while to become established, and their leaves are tattered from their jungle experience. Species phalaenopsis that have been nursery-grown from seed are generally more vigorous and will adjust better to a home environment. So, only buy from a grower or supplier who assures you that his orchids are seed-grown, not wild-collected. Fortunately, very few wild-collected plants are in the trade today because of international laws that prohibit their importation and exportation.

Check out the color insert for a photo of *Phalaenopsis pulcherrima* var. *champornensis*.

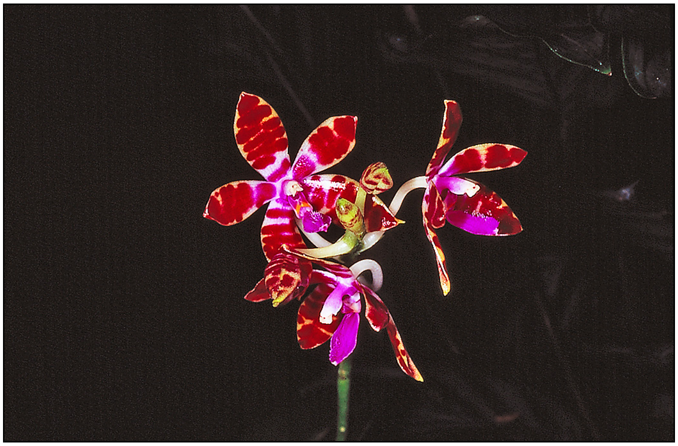

FIGURE 10-10: *Phalaenopsis mariae* sports a colorful pattern of brown and red spots on its glossy white flower.

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Oh, Give Me a Home . . .: Cultural Requirements

Moth orchids do well in medium to low light, like other houseplants like African violets. They also thrive in moderate humidity of 50 percent or so and average daytime temperatures of 70°F to 80°F (21°C to 26°C) during the day and about 65°F (18°C) at night.

WARNING

Moth orchids are particularly susceptible to a disease commonly called *crown rot*, which is usually the result of water pooling in the small pocket formed at the new, young growth of the orchid. To prevent this disease, make sure this growing point stays dry overnight. If you need to, use a cotton swab to remove this extra moisture.

JUDGING WHITE MOTH ORCHIDS

Although you may not be interested in having your phalaenopsis judged, you may be curious what orchid judges are looking for in the "perfect" moth orchid flower.

Orchid societies around the world have their own orchid judging systems, and they all have their own specific criteria that they use to determine if one moth orchid flower is superior to another. These points systems determine which moth orchid is worthy of various honors or awards. In simple terms, moth orchids that are flat, round, and large, with strong color or patterning, heavy substance, high flower count, and good presentation on the inflorescence are favored over those that don't. Vigor, ease of flowering, frequency of flowering, attractive foliage, and fragrance aren't part of the usual award evaluation process. If obtaining awards and ribbons at orchid shows is one of your goals, then obtain the judging criteria from your governing orchid society so you know what the judges are looking for. If that's not important to you, then any healthy moth orchid that you enjoy is a good one in your eyes.

Although these are standards for the white phalaenopsis, they also hold true for most of the other "standard" or large flowered hybrids:

- **Form:** Flowers with full round shape with smooth edges. Dorsal sepal should be broader than the lateral sepals, and the space between the sepals should be filled with the petals.
- **Size:** The hybrid should have flower size at least as large as its parents. Flower size used to mean everything to the judges, but as the flowers got larger, in general, the flower count got lower. It seems today that flower count has become at least as important as flower size.
- **Substance:** As with size, the *substance* (the thickness of the petals and dorsals) should be at least as good as its parents. Thicker substance usually translates to longer flower life so it's a desirable quality.
- **Texture:** Smooth, crystalline texture of the surface of the flowers is most sought after.
- **Habit of inflorescence:** The *inflorescence* (flower spike) should be vertical and then gracefully arch forward and downward.
- **Number of flowers and buds:** The hybrid should have a flower count equal or greater than what could be expected from its parents. In general, the more flowers the better. There is somewhat of a relationship between the number and size of flowers. Usually, a smaller flowering hybrid is expected to be more floriferous than one with very large flowers. For standard whites to be winners, they usually need to have a spread of about 5 inches (12.5 cm) with about a dozen flowers on the inflorescence.
- **Arrangement:** Judges look for flowers to be spaced well on the inflorescence with no flowers being hidden.

IN THIS CHAPTER

- **Understanding how cattleyas and laelias made it from nature to your home**
- **Growing cattleyas' wild relatives**
- **Looking at the manufactured cattleya orchids**
- **Discovering small-growing cattleyas, the minicatts**

Chapter 11

The Quintessential Orchids: Cattleyas and Their Relatives

Until the skyrocketing popularity of the phalaenopsis took off in the early 2000s, the cattleyas were the undisputed kings of orchids. They're still highly popular, because they offer huge and frequently fragrant flowers, in a complete spectrum of colors and flower shapes, on plants varying in size from a few inches (5 cm) to a few feet (60 cm) tall. To see how the glorious flowers of cattleyas are constructed, see Figure 11-1.

In this chapter, I introduce you to a few of the many orchids in this illustrious group that are readily available and easy to grow. You can see why they epitomize the beauty and fragrance that only orchids can offer.

REMEMBER

This group of orchids has undergone many name changes. Although many growers and sellers still use the older name, some do use the newer name. To help you keep track of them, I list them by the older and more commonly used name and give the new name in parentheses to clarify some of the confusion.

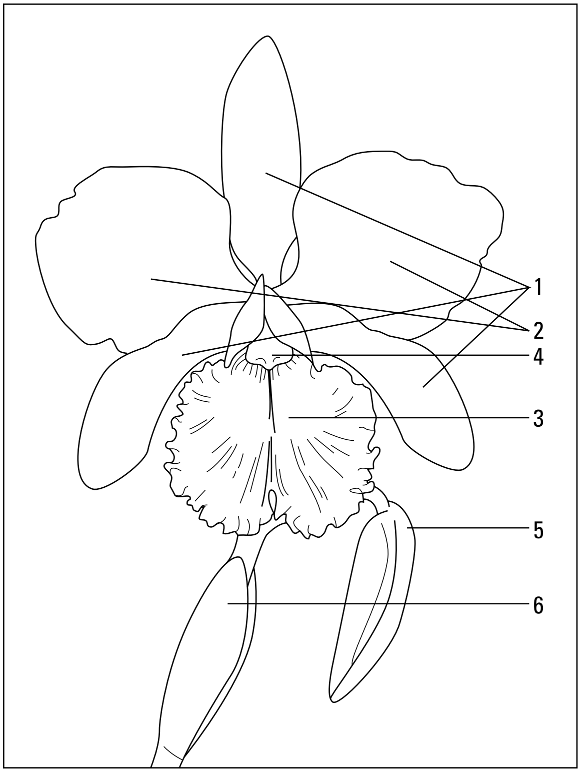

FIGURE 11-1: The structure of a typical cattleya flower (1 = Sepals; 2 = Petals; 3 = Lip; 4 = Column; 5 = Bud; 6 = Sheath).

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Cattleyas grow best in moderate humidity and medium to bright light, with good air circulation, and in intermediate temperatures. For general cultural information, see Chapter 5.

From the Jungles to Your Home

In the 1800s, plant collectors and explorers risked their lives and lived in steamy tropical outposts to bring these South American orchids to the plant lovers of Europe. Today, all the best forms are readily available, and none have been collected from the wild. Instead, the best cattleyas are raised from seed or clones (see Part 1) in laboratory flasks, which isn't only good news from a conservation standpoint (they aren't resulting in destroyed natural habitats from field collecting) but also because these plants are generally stronger and more vigorous than those collected from the wild and adapt better to home-growing situations.

Although all cattleya species are interesting, some of them really stand out for their gorgeous flowers and sumptuous fragrance. Here are some choice ones.

Focusing on some selected cattleya species

Some of the cattleya species are a little more of a challenge to grow than the hybrids, so if you want to go right to the easier plants, skip this section and move on to "The Queens of the Ball: Cattleya Hybrids," later in this chapter.

However, if you prefer the simple, classic flower that the species offers, here are some to try that are usually readily available:

- ***Cattleya amethystoglossa:*** You'll need a tall, very bright window to accommodate this orchid, because it can reach 3 feet (1 meter) in height. Its 2½-inch (7-cm) light pink flowers speckled with purple and highlighted with a purple lip are in clusters of up to a dozen and appear in the spring.
- ***Cattleya aurantiaca* (now called *Guarianthe aurantiaca*):** A longtime favorite with dark green shiny leaves on a compact 12-inch (30-cm) plant, this orchid is loaded with clusters of orange to red, 1½- to 2-inch (4- to 5-cm) flowers.
- ***Cattleya bicolor:*** Clusters of 3-inch (7.5-cm) coppery to pinkish-brown, waxy, spicy-scented flowers with contrasting bright-pink lips that appear in the spring make this species a standout. The plant grows to about 20 to 36 inches (50 to 85 cm) tall. Repot this orchid only when new roots are starting to develop. Fragrant.
- ***Cattleya guttata:*** This orchid is very similar in most respects to *Cattleya amethystoglossa,* except that it blooms in the summer and fall.
- ***Cattleya harrisoniana*:** Pink to deep rose, floral-scented flowers are displayed on this summer or fall bloomer. This plant (see Figure 11-2) is best repotted in the spring. Fragrant.
- ***Cattleya intermedia:*** Generally this compact orchid grows 5 to 8 inches (13 to 20 cm) but can reach about 15 inches (40 cm) high with leaves about 6 inches (15 cm) long. It produces sizable, 6-inch (15-cm) sweet floral-scented flowers that are a light pink with a contrasting dark purple lip.
- ***Cattleya leuddemanniana:*** Up to five 4½- to 5-inch (10- to 13-cm) richly purple flowers veined in yellow adorn this floral-scented, spring-blooming plant.
- ***Cattleya maxima:*** Loaded with 5-inch (12.5-cm) lavender-pink, baby-powder-scented flowers that display lips with dark purple veins and yellow throats, this fall- to early-winter-blooming orchid (see Figure 11-3) is Peru's national flower.

- ***Cattleya tenebrosa:*** A striking species, this orchid is a summer bloomer that hales from Brazil. The dramatic contrast between its bronzy petals and sepals and crimson lip make it quite a standout. See the color insert for a photograph.

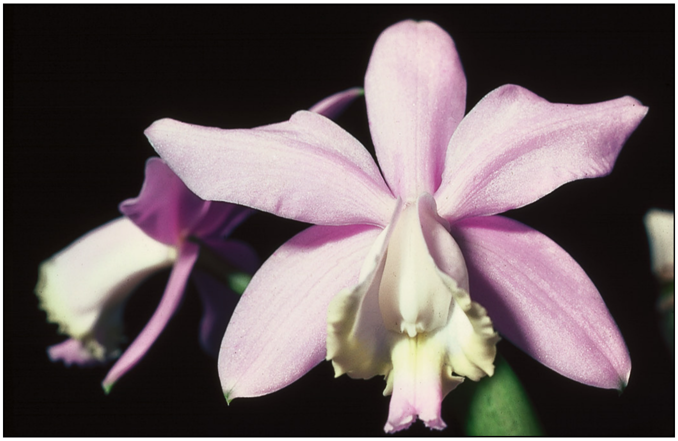

FIGURE 11-2: *Cattleya harrisoniana* has been a longtime favorite cattleya species.

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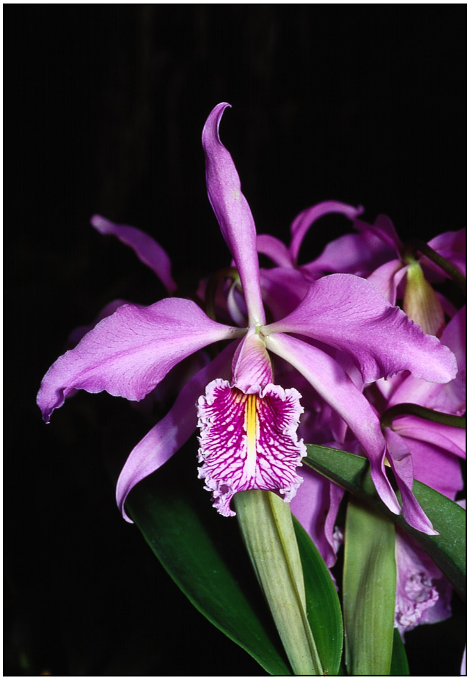

FIGURE 11-3: Peru is proud to have the *Cattleya maxima* as its national flower.

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TIP

Some tall-growing cattleyas can be very top-heavy, especially when they're in full bloom. Potting them in squat, azalea-type clay pots that have wider bases and/or putting 1 inch (2.5 cm) or so of clean gravel in the bottom of the pots helps prevent the plants from toppling over.

Recognizing some selected species that used to be called Laelias

Even though the names of some species in this group have officially changed, most growers still know them as Laelias so that's how I list them here. These species look very much like cattleyas. In fact, few amateurs are able to tell them apart. One difference: They usually have somewhat of a smaller lip than other cattleyas. They're native to the same areas as their close cousins, cattleyas, and have very similar cultural requirements.

Following is a sampling of some of the easier and more beautiful in this group that are worthy of space in your orchid collection:

- ***Laelia anceps:*** This orchid (see Figure 11-4) is a toughie that's hardy to 20°F (–6.6°C) and is a favorite for growing outdoors in mild parts of California and the southeastern United States. It comes in various color forms but most commonly has clusters of two to six 2½- to 3-inch (6- to 8-cm) light lavender flowers with darker purple lips and throats. The flower spike can reach up to 3 feet (1 meter), so be sure to give it plenty of headroom when it sends up its flower spikes.
- ***Laelia autumnalis:*** Native to the southern mountains of Mexico, this orchid blooms in the fall, as the species name indicates. Its flowers are borne on a long flower spike, 2 to 3 inches (60 to 90 cm). It requires cool dry conditions in the winter and, although the most common flower color is shades of pink, it's available in a wide range of other color forms. Check out the color insert for a photograph.
- ***Laelia perrinii* (now called *Cattleya perrinii*):** A native of Brazil, this species isn't yet commonly found, but it's sure to increase in popularity because it's a robust grower, reaching about 14 to 16 inches (30 to 40 cm) in height. It sports lightly spice-scented, fine-quality, lavender flowers measuring up to 6 inches (15 cm) across, with lips that are trumpet-shaped and edged with deep violet with white in the throat. Blue and white color forms are also available.
- ***Laelia pumila* (now called *Cattleya pumila*):** A compact grower that only reaches a height of 8 inches (20 cm), this species is frequently grown mounted on a slab of tree fern or cork. It has a short flower spike with one to two lightly floral-scented flowers that average 3 to 4 inches (8 to 10 cm) across. The entire flower is lavender-colored, sometimes with a darker lip. It comes in other color forms, including a blue one.

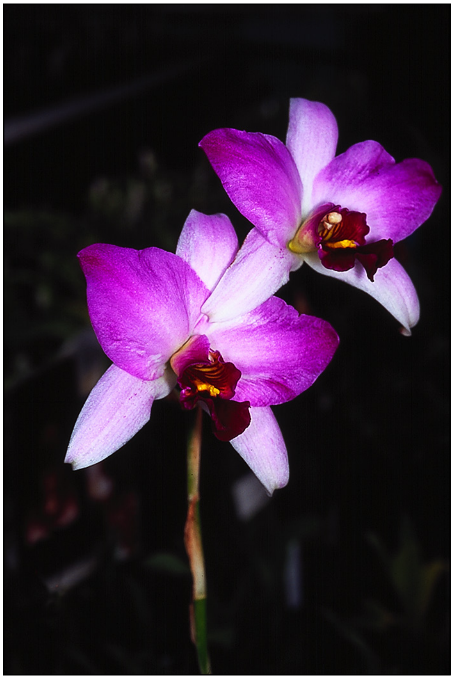

FIGURE 11-4: *Laelia anceps* bears its flowers on tall, elegant spikes.

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A species that looks very similar to *C. pumila* is *Cattleya bicalhoi.* You can see a photograph in the color insert.

- ***Laelia purpurata* (now called *Cattleya purpurata*):** This is a glorious plant with flowers that vary quite a bit from plant to plant but generally are about 6 inches (15 cm) across, white, frequently with violet-blue lips (there are various lip colors), and a spicy or anise scent. It needs to be grown on the cooler and drier side during the winter months to bloom best in the spring to summer.

THE REAL TRUTH ABOUT FLOWER COLOR

Orchid flower color descriptions in catalogs sometimes reflect more what the breeder or seller of orchids would *prefer* the flower color to be than what it actually *is.* When the flower color is described as "yellow," "pink," "white," or "orange," it's usually close to that color. When the color descriptions drift toward solid blues and clear reds, that's where wishful thinking sometimes takes over. Most "blues" are actually bluish shades of purple or lavender, and most "reds" are actually dark-oranges.

Looking at other cattleya relatives

A slew of other orchid species are closely related to cattleyas and laelias. In the following sections, I tip you off to some good performers from this group.

Brassavolas

You can find several excellent brassavola species, but the one that leads the pack because of its popularity and ease of growing (with the same cultural requirements as cattleyas) is *Brassavola nodosa* (shown in Figure 11-5), commonly called Lady of the Night, because of its enchanting and permeating evening fragrance. One to six of its spidery greenish white flowers, from 3 to 6 inches (7.5 to 15 cm) across, are borne on a 6-inch (15-cm) flower stem. It's a clump-forming orchid that gives its best show when it *isn't* divided.

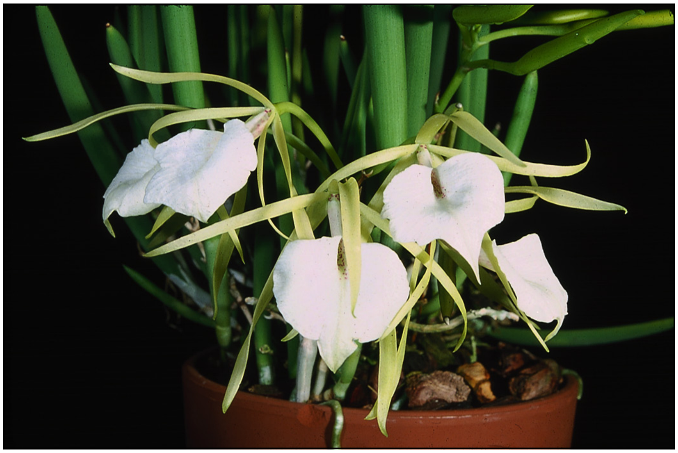

FIGURE 11-5: *Brassavola nodosa* is often recommended as a beginner's orchid because of its ease of culture and delightful evening fragrance.

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Other brassavolas worth considering include

- ***Brassavola cordata* (now called *Brassavola subulifolia*):** Has up to 20 lime green, 2-inch (5-cm) blooms with heart-shaped lips. Usually blooms twice a year.
- ***Brassavola cucullata:*** Has spidery, exotic white to green flowers that are sometimes tinged with yellow or burgundy. Blooms in the summer to fall.
- ***Brassavola flagellaris:*** Not as well-known as *Brassavola subulifolia,* but like its cousin it's easy to grow. Its flower is similar in shape and color to the others in this group, but it's blessed with a wonderful hot-chocolate fragrance.

- ***Brassavola martiana:*** Its flower is white with a fringed lip and green-yellow points.
- ***Brassavola perrinii:*** This species has one of the largest flowers of the brassavolas. It usually blooms in the summer but can be variable.

Broughtonia

Broughtonia sanguinea (shown in Figure 11-6) is a small grower, 3 to 4 inches (8 to 10 cm) high, with clusters of 1-inch (2.5-cm) reddish-purple, pink, magenta to crimson flowers, usually veined in dark purple on an 8- to 16-inch (20- to 40-cm) stem. This orchid blooms in the summer and likes a very bright spot. Water and fertilize it regularly during its peak growth in the summertime.

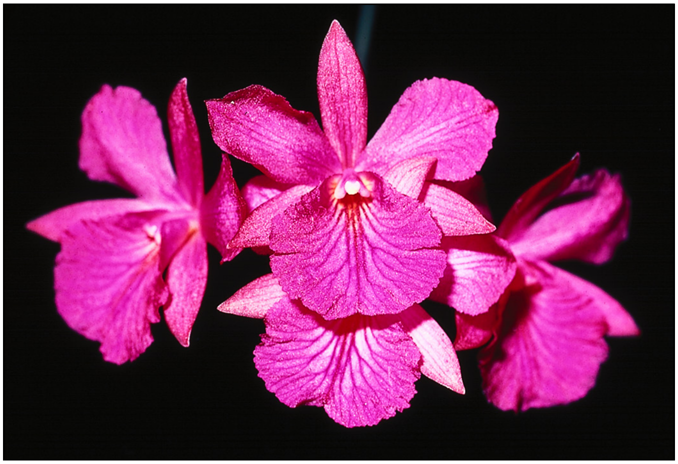

FIGURE 11-6: *Broughtonia sanguinea* is a charmer native to Cuba and Jamaica.

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A hybrid using Broughtonia as one of its parents is *Cattleytonia* Kat Golden. Eye. It inherited the flower color and compact growth habit from *Broughtonia* and its larger flower size from *Cattleya.* The result is a charming orchid that is small enough to fit in any collection. You can see a photograph in the color insert.

Encyclias and Prosthecea

This group contains some of the easiest of all orchids to grow and bloom. Many of them are also fragrant. I group these together because they're closely related, and some growers still refer to them all as encyclias:

- ***Encyclia adenocaula:*** Most encyclias are shades of green and white with some purple markings. This Mexican beauty is different, with rosy-pink to magenta, star-shaped flowers that are borne on long branched sprays.
- ***Encyclia cordigera:*** Not only is this species considered to be one of the handsomest in the encyclia group, it also fills the air with the fragrance of vanilla. It displays clusters of deep maroon flowers with bright pink lips. The plant is modest in size and grows 12 to 15 inches (30 to 37 cm) tall. See the color insert for an example.
- ***Encyclia tampensis alba:*** Sometimes called the Florida Butterfly Orchid, it's native to Florida, Bahamas, and Cuba, and the most common color of the flower is brown with a purple white lip. This one pictured in the color insert is called an *alba* form (meaning white in Latin) because it lacks the dark pigments found in its common form and has a white lip. It has grass-like foliage and sports many small flowers on its flower spikes when it blooms in the summer.
- ***Prosthechea cochleata* (now called *Encyclia*):** Commonly called the cockleshell or clamshell orchid because its upside down flower lip looks like one, this unique-looking orchid (see Figure 11-7) is easy to grow and often blooms several times a year. The lip is streaked with purple, whereas the rest of the spidery shaped flower is green.

TIP

Don't be in a rush to cut off the flower spike after the flowers wilt because other new flowers can originate from this older flower stem.

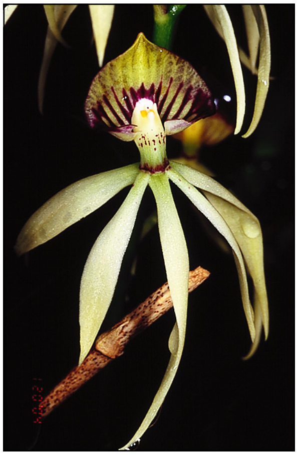

FIGURE 11-7: *Prosthechea cochleata* is recommended as an ideal beginner's orchid because it's so easy to grow and blooms on an almost constant basis.

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- ***Prosthechea fragrans* (*formerly called Encyclia*):** The flower of this easy-to-grow orchid is a 2-inch (5-cm) subtle green with purple stripes in the lip. This orchid is so well-liked because it's so easy to grow and bloom and because it emits a heavy gardenia fragrance.
- ***Prosthechea radiata* (formerly called *Encyclia*):** The subtle creamy white, cockleshell-type flowers with purple stripes in the lip, borne in clusters, aren't what make this orchid (see Figure 11-8) so popular — though they *could* be. Instead, its ease of growing and blooming and wonderful fragrance — which has been variously described as smelling spicy-floral or like coconut cream pie, lilac, cinnamon, and hyacinth — are what keep people coming back to this orchid.

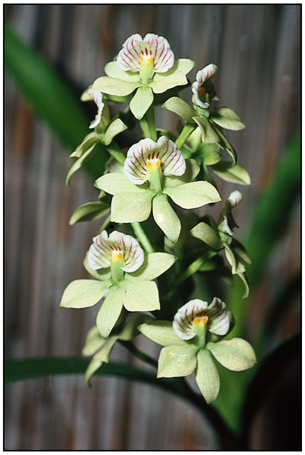

FIGURE 11-8: The claim to fame of the *Prosthechea radiata* is its sweet-scented flowers.

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Epidendrum

This group is filled with very brightly colored members, and some have a very strong resemblance to encyclias:

- ***Epidendrum ciliare:*** The 3- to 6-inch (7.5- to 15-cm) lime-green petals of this orchid (see Figure 11-9) are set off by its exquisite white fringed lip. The plant reaches about 16 inches (40 cm) tall and is said to have the fragrance of grapefruit.
- ***Epidendrum cinnabarinum:*** Bright-orange 1½-inch (4-cm) flowers with fringed yellow lips are the main feature of this colorful epidendrum. The flowers are borne in succession, so the plant can be in bloom for months during the summer. This orchid can grow quite tall, up to 4 feet (120 cm), and is often grown in large, mass plantings in semitropical to tropical climates.

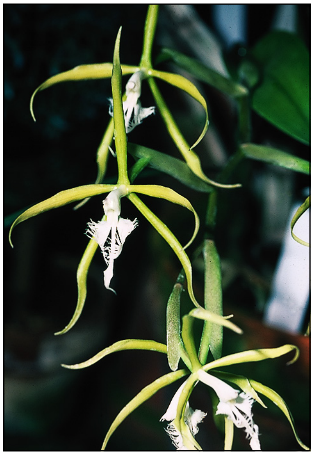

FIGURE 11-9: *Epidendrum ciliare* has a spidery green flower with a delicate white fringed lip.

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- ***Epidendrum difforme:*** This orchid has glossy green flowers about 1¼ inches (3 cm) on short spikes with a medicinal scent.
- ***Epidendrum stamfordianum:*** A large, well-grown plant of this type of orchid is something to see. It's loaded with spikes of hundreds of fragrant, 2-inch (5-cm) yellow flowers painted in burgundy with white and yellow lips. It usually blooms in late winter to early spring.
- ***Epidendrum tampense (formerly called Encyclia)*:** A Florida native that is hardy as far north as the central part of the state, this orchid has green flowers overlaid with brown with white lips marked with purple blotches. It emits a sweet scent when it flowers in the summer.
- ***Epidendrum* Yoko Yokohama:** This orchid has brilliant hot-pink flowers. Refer to the color insert for a photo.

A hybrid that has epidendrum as one of its parents is *Guaricyclia* Dora Tinschert 'Springdale.' The color insert has an example.

Sophronitis (now all called Cattleya)

These orchids consist of dwarf-growing plants with oversized red and orange cattleya-shaped flowers that shimmer in the sunlight. If you see any of them at a greenhouse for sale — for example, *Cattleya coccinea* (see Figure 11-10; used to be called *Sophronitis coccinea* or *Sophronitis grandiflora*) — you'll surely want to buy one.

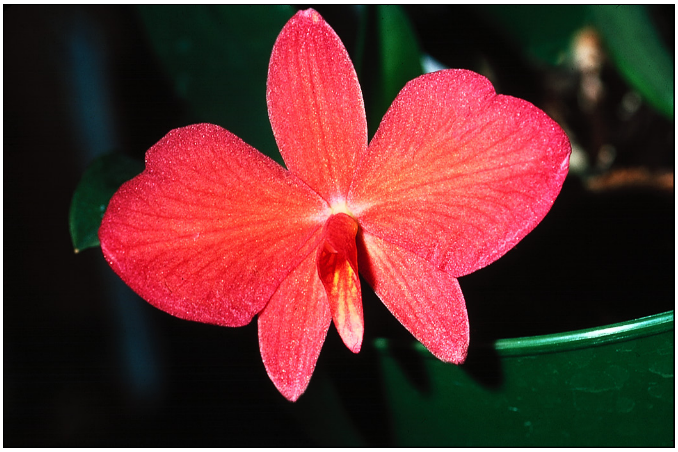

FIGURE 11-10: *Cattleya coccinea* is a charming plant, but think again before buying one.

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WARNING

However, resist the urge to buy it — at least until you have several years of orchid growing under your belt. These diminutive darlings can be very tricky to grow and bloom. You're much better off purchasing a hybrid that has used one of these species as a parent (see the sections, "Hot reds and oranges" and "Exploring the Miniatures: The Minicatts," later in this chapter). Those hybrids are more vigorous, easier to flower, and much less demanding. A hybrid that looks very similar in flower and compact growth habit, *C.* Psyche 'Prolific,' is easier to grow. See the color insert for a photo.

The Queens of the Ball: Cattleya Hybrids

A modern, standard-size cattleya hybrid in full bloom is a sight to behold! Thanks to the skill of orchid hybridizers and the breeding willingness of cattleyas and their relatives to participate in this process, the results have been flowers in a breathtaking array of colors and heady fragrances.

Because cattleya breeding has progressed to such a high state of perfection, it's actually difficult to choose a bad one. In the following sections, I show you a few of the many outstanding hybrids, arranged by approximate color group. Note that the following is just the tip of the iceberg; there are many new hybrids being produced and introduced every year. The range of flower color combinations seems endless. The United States used to be the premier breeder of the cattleya alliance orchids, but now Asia plays a major role, which is reflected in the names of some of the newer hybrids.

TIP

For all cattleyas, purchasing clones is usually your best bet. (See Chapter 2 for more information on clones or meristems.) They're very reasonably priced, you'll know exactly what they'll look like, and their flowers will usually be superior to the standard hybrids.

Pristine whites

White cattleyas are almost as classic as the lavender ones. The modern hybrids have full, round, and fragrant flowers. Here are two old classics that are still popular:

- ***Brassocattleya* Mount Hood (now called *Rhyncholaeliocattleya* Mount Hood):** This orchid is a pristine white with a golden-yellow lip and the heady fragrance of vanilla.
- ***Cattleya* Bow Bells:** This is another veteran that you'll find in the background of many of today's hybrids. It has fine form, and its frilly lip is marked on the inside with a touch of yellow.

You can choose from many newer hybrids, such as *Rhyncholaeliocattleya* Pastoral 'Innocence' AM/AOS, but the more colorful cattleya hybrids are getting more attention from orchid breeders these days.

Purples, pinks, lavenders, and blues

Purple hybrids have been around a long time. Any orchid in this color group is a good choice. The blue shades in cattleyas are newer. Most of the purples are highly fragrant. You can't go wrong with any of the newer and older hybrids. Here are just a few possibilities:

- ***Brassocattleya* Blue Grotto (now called *Rhyncattleanthe* Blue Grotto):** This orchid is referred to as a blue or coerulea, but it's more like a violet purple.
- ***Brassocattleya* Norman's Bay 'Low's' FCC/AOS (now called *Rhyncholaeliocattleya* Norman's Bay):** Although first introduced in England in 1946, this is still a standard bearer today of purple cattleya breeding and is still used as a parent.
- ***Brassocattleya* Pamela Hetherington 'Coronation' FCC/AOS (now called *Rhyncholaeliocattleya* Pamela Hetherington):** Named for a family member of the illustrious cattleya breeder, Ernest Hetherington, this is a 6-inch (15-cm) lavender-pink flower with a pink ruffled lip and orange-yellow throat. Its flower is a superb shape and is strongly fragrant.

- ***Cattleya* Irene Holguin:** This is a lavender orchid with excellent shape and color.
- ***Cattleya* Horace 'Maxima' AM/AOS:** A famous clone noted for its excellent form and long-lasting flowers. It's used as a parent for some of the newer hybrids.
- ***Cattlianthe* Angel's Treasure 'Hawaii':** You can't beat this lovely multi-flowering pink hybrid. See the color insert for a photo.
- ***Iwanagaara* Appleblossom (now called *Jackfowlieara* Appleblossom):** This hybrid has a complicated history. The result is a hybrid with elegant sprays of sweet-smelling, 3½-inch (9-cm) light-pink flowers with darker pink markings and gold in the throat. This orchid is readily available and comes in various color forms and size of plant. Its flowers are particularly long lasting. To see an image of this orchid, check out the color insert.

Hot reds and oranges

Most of the red hybrids are compact growers because a frequent parent is one of the sophronitis, which are red, orange or yellow and very dwarf. Here are some to look for — either as plants you'll grow, or in the parentage of the plants you're considering:

- ***Brassolaeliocattleya Oconee* (now called *Rhyncholaeliocattleya* Oconee):** A large-flowered orchid, with fragrant, red-purple flowers with a dark red lip.
- ***Brassolaeliocattleya* Edisto (now called *Rhyncholaeliocattleya* Edisto):** Large purple-red, with up to five flowers per stem. This is a fall bloomer.
- ***Brassolaeliocattleya* Owen Holmes 'Mendenhall' AM/AOS (now called *Rhyncholaeliocattleya* Owen Holmes):** Considered one of the best of all reds, it's frequently used as a parent to pass its superior coloring to its offspring. A good choice.
- ***Cattleya* Anzac:** This is a luscious red hybrid that inherited the red pigmentation from these species. See the color insert for a photo.
- ***Cattleya* Chocolate Drop 'Kodama' AM/AOS (now called *Cattlianthe* Chocolate Drop):** This one has clusters of glossy burgundy flowers with yellow on the column and the fragrance of lily-of-the-valley.
- ***Potinera* Theresa Hill 'Krull-Smith' AM/AOS (now called *Rhyncholaeliocattleya* Theresa Hill):** Burgundy-red flowers with a gold throat.

- ***Sophrolaeliocattleya* Hazel Boyd (now called *Cattlianthe* Hazel Boyd):** Another winner with various bright-orange tones and excellent plant vigor.
- ***Sophrolaeliocattleya* Jewel Box 'Dark Waters' (now called *Cattlianthe* Jewel Box):** Another popular one that is a very dark red clone.
- ***Sophrolaeliocattleya* Jewel Box 'Scheherazade' AM/AOS (now called *Cattlianthe* Jewel Box):** An older hybrid (see Figure 11-11) that is still popular today because of its manageable size, clear red flowers, and easy culture.

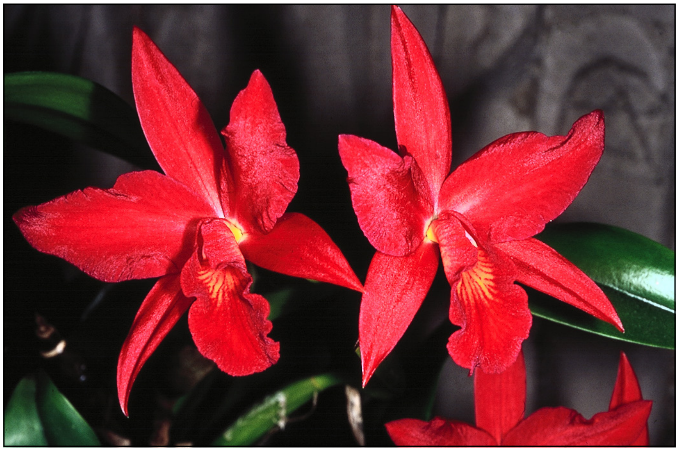

FIGURE 11-11: *Cattlianthe* Jewel Box 'Scheherazade' AM/AOS still remains a favorite.

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See the color insert for images of two brilliant yellow and red hybrids in this group: *Cattlianthe* Trick or Treat x *Epidendrum stamfordianum* and *Cattlianthe* Sutter Creek.

Sunny yellows

Fine yellows have been a more recent development. Today's hybrids range from gold to butter yellow. Some are solid yellow, whereas others have darker colored red or purple splotched lips. A few names of hybrids and parents of new hybrids you can look for include the following:

- ***Brassocattleya* Goldenzelle 'Lemon Chiffon' (now called *Rhyncholaeliocattleya* Goldenzelle):** A fine example of how far yellow flowers in cattleya hybrids have come, this one (see Figure 11-12) sports 6-inch (15-cm) lemon-yellow flowers with a splash of deep red on the lip. This is a winter bloomer and a frequent winner at orchid shows.

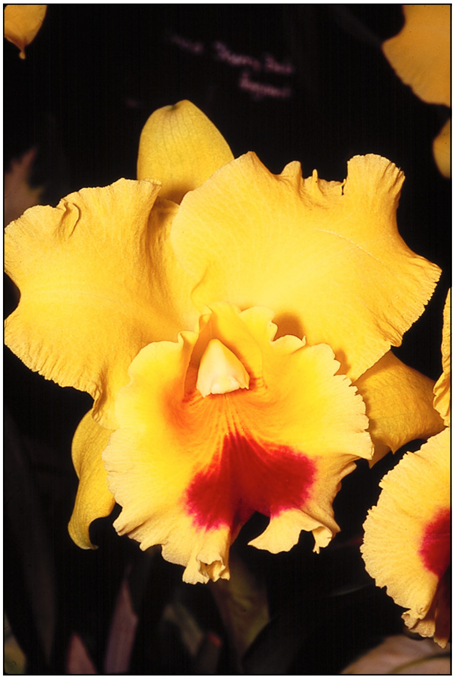

FIGURE 11-12: *Rhyncholaeliocattleya* Goldenzelle 'Lemon Chiffon' AM/AOS is a gorgeous soft lemon-yellow that demonstrates well the advances in breeding.

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- ***Brassocattleya* Formosan Gold (now called *Rhyncholaeliocattleya* Formosan Gold):** Its dark-red ruffled lip provides a dramatic contrast with its golden-yellow petals and sepals that have a spread of about 4½ inches (11 cm) across. See the color insert for a look at this orchid.
- ***Brassocattleya* Malworth 'Orchidglade' FCC/AOS (now called *Rhyncholaeliocattleya* Malworth):** Highly awarded and one of the best known yellows.
- ***Brassolaeliocattleya* Darcy-Rose Campbell 'Volcano Queen' (now called *Rhyncholaeliocattleya* Darcy-Rose Campbell):** The flower of this gorgeous huge yellow flower is splashed with red on the lip.
- ***Laeliocattleya* Lorraine Shirai (now called *Cattleya* Lorraine Shirai):** A bright yellow with a contrasting red lip.
- ***Potinara* Twentyfour Carat 'Lea' (now called *Rhyncattleanthe* Twentyfour Carat 'Lea'):** A large, handsome, clear gold yellow. Check out the color insert to see a photo of this beauty.
- ***Potinara* Haw Yuan Gold (now called *Rhyncattleanthe* Haw Yuan Gold):** The Taiwan orchid breeders have been making notable contributions to the cattleya group, and this award-winner with its 6-inch (15-cm) bicolor bloom — yellow petals and darker yellow lip — is one of them.

- ***Potinara* Songher Gold (now called *Rhyncholaeliocattleya* Songher Gold):** This orchid sports a pure sunshine yellow flower.

Cool greens

Something is refreshing about lime-green flowers. They have their own following of orchid lovers. Some of their flowers have very fringed lips, usually inherited from the species *Rhyncholaelia digbyana* (formerly known as *Brassavola digbyana*). This unique species is also noted for its strong fragrance. Some of the greens have clear-colored flowers, whereas others are blotched in purple. Here are some choices to consider:

- ***Brassocattleya* Greenwich (now called *Rhyncholaeliocattleya* Greenwich):** This cross is a classic that was made in the late 1960s but still shows up in today's offerings. The flower is about 4 inches (10 cm) across with purple markings on its fringed lip.
- ***Brassocattleya* Ports of Paradise 'Emerald Isle' HCC/AOS (now called *Rhyncholaeliocattleya* Ports of Paradise):** One of the most awarded of the greens, this orchid offers large lime-green flowers, a strong fragrance, and a ruffled lip.
- ***Brassocattleya* Rio's Green Magic (now called *Rhyncholaeliocattleya* Rio's Green Magic):** This hybrid (see Figure 11-13) shows, with its deeply fringed lip, the influence of the species *Rhyncholaelia digbyana.* It has large, 5-inch (13-cm) flowers.

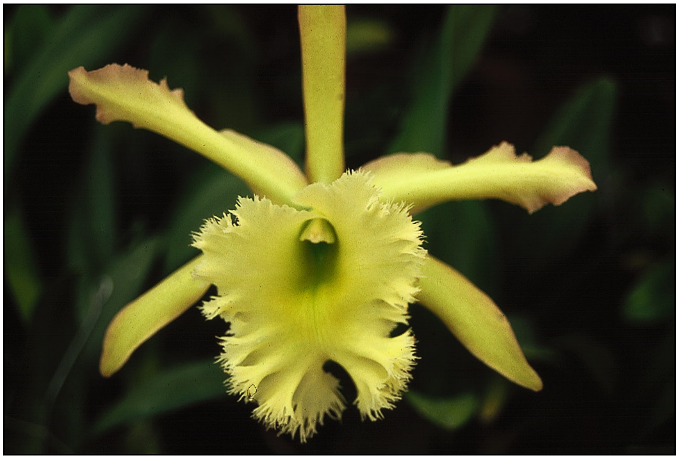

FIGURE 11-13: *Rhyncholaeliocattleya* Rio's Green Magic offers unique beauty and a sensuous fragrance.

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- ***Brassolaeliocattleya* Prada Green Deluxe 'N N' AM/AOS (now called *Rhyncholaeliocattleya* Prada Green Deluxe):** An elegant fringed lip beauty.

Bring out the clowns: Splash petals and flares

This group is commonly called "clowns" because of the sense of gaiety their wild color combinations impart. They're marked with two or more splashes or flares of contrasting colors, and the results can be quite dramatic. These days this group of cattleyas has received the lion's share of the cattleya breeders' attention. Here are some top clowns:

- ***Brassocattleya* Momilani Rainbow (now called *Rhyncattleanthe* Momilani Rainbow):** A real showstopper with 6-inch (15-cm) flowers and light lavender-pink sepals, dark pink petals, and lips with bright splashes of lemon yellow on them.
- **Brassolaeliocattleya Robert's Choice 'Dee' (now called *Rhyncholaeliocattleya* Robert's Choice):** This has up to 6-inch (15-cm) flowers that have a white background with splashes of purple and a purple lip. Like some of the other cattleya hybrids it can bloom twice a year.
- ***Cattleya intermedia* var. *aquinii:*** This is the orchid that really started it all. It was the first one that displayed flares of color in the petals and lip, so it was used extensively in hybridizing to pass this quality on to its offspring. In this case, the coloring was purple flares on white petals and the lip. This variety is sometimes offered for sale these days but is more frequently found in the parentage of many of the newer splash petals and flares.
- ***Laeliocattleya* Colorama 'The Clown' (now called *Cattleya* Colorama):** Another old classic that has proven invaluable as a parent for future splash-petaled varieties, this orchid has white petals and purple flares with a larger flower than *Cattleya intermedia* var. *aquinii.*
- ***Laeliocattleya* Gaiety Flambeau (now called *Cattleya* Gaiety Flambeau):** A more modern hybrid that has large clusters of white flowers with purple flares.
- ***Laeliocattleya* Mari's Song 'CTM 217' (now called *Cattleya* Mari's Song):** This is one of the best and most popular tricolored, splash-petaled varieties. It has a yellow and white flower with magenta flares and lip with pink sepals and a yellow throat. What a grand color combo! On top of that, it's very fragrant.

- ***Potinara* Burana Beauty 'Burana' HCC/AOS (now called *Rhyncattleanthe* Burana Beauty):** A compact grower (see Figure 11-14) that reaches about 12 inches (30 cm) tall, its 3½-inch (9-cm) citrus-scented flowers are a yellow-green with red flares. Frequently blooms twice a year.

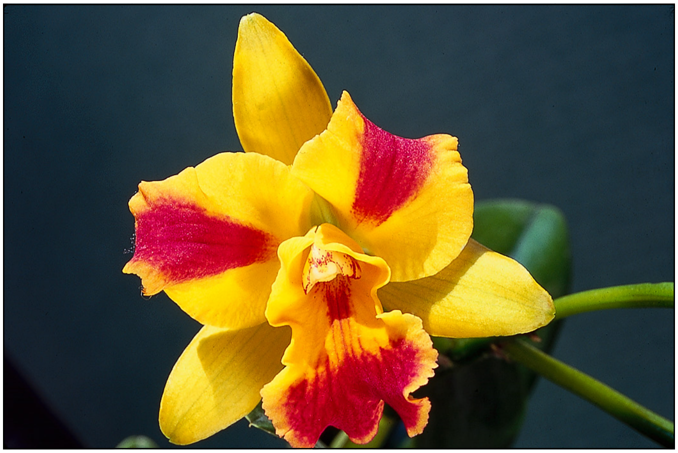

FIGURE 11-14: *Rhyncattleanthe* Barana Beauty 'Burana' HCC/AOS offers clusters of citrus-scented green flowers with red flares.

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Fashionable art shades

This is a catchall category that includes cattleya-type hybrids that combine a range of pastel colors. Because of space limitations of most home orchid growers, smaller growing cattleyas are becoming more popular. Here are a few of the many nice ones:

- ***Brassolaeliocattleya* George King (now called *Rhyncholaeliocattleya* George King):** A salmon-peachy, fragrant, 6-inch (15-cm) flower with crystalline texture and the fact that this one often blooms more than once a year make this a popular selection.
- ***Brassolaeliocattleya* Harlequin 'Act II' (now called *Rhyncholaeliocattleya* Harlequin 'Act II'):** Another flower with a mixed palette of colors including peach, yellow, and purple flares. A sumptuous beauty. See the color insert for a photo.
- ***Brassolaeliocattleya* Hawaiian Avalanche (now called *Rhyhncolaeliocattleya* Hawaiian Avalanche):** This orchid (see Figure 11-15) shows off a delightful display of tropical color with the 6-inch (15-cm) apricot-pink flowers with a golden-orange fringed lip and purple streak down the center of the lip.

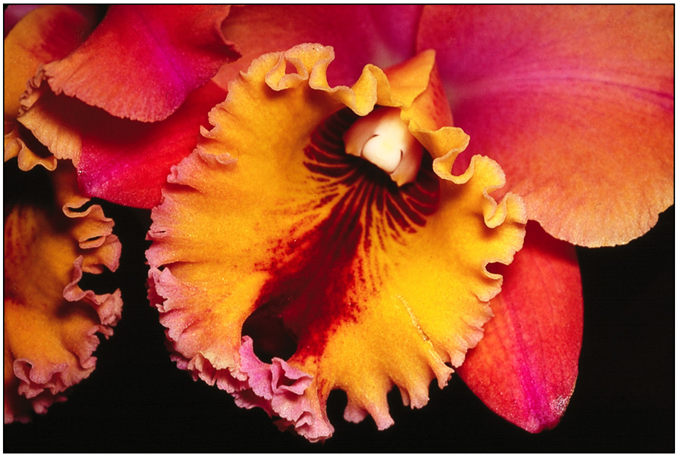

FIGURE 11-15: *Rhyhncolaeliocattleya* Hawaiian Avalanche provides a riot of color.

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Exploring the Miniatures: The Minicatts

For the past few decades cattleya breeding has been focused on producing plants that are smaller in stature than the earlier large growing hybrids. Now, small is in — at least in plant size. In earlier times, when cattleya orchids were primarily grown in commercial greenhouses for cut flowers and corsages, the objective was to produce very large flowers. The plants also tended be sizeable. Although there is no denying that full-size cattleyas in bloom are impressive, unfortunately they also take up a lot of growing space. And for windowsill and under-light growers, where every square inch counts, this creates a problem. This is where minicatts (short for *miniature cattleyas*) come in.

They have no special cultural requirements that differ from the standard, full-size plants: Because they're commonly planted in small clay pots, they tend to dry up more quickly than the larger plants in bigger pots, so you need to keep a sharper eye on your watering to make sure they don't get too dry.

Here I introduce you to some of the orchid parents and their offspring in this group of orchids.

Identifying the key players

These are the species with miniature-to-small growth habits that have been the principal contributors to this breeding effort. Each of these species is popular in its own right, but each has also been even more important for contributing its desirable characteristics to future orchid generations:

- ***Brassavola nodosa:*** For more information on this orchid, refer to the "Brassavolas" section earlier in this chapter. This popular species added its small size, spidery flower shape, and evening fragrance to the minicatt gene pool.
- ***Cattleya aclandiae:*** A little dazzler with 3- to 4-inch (7- to 13-cm) yellowish-green to brown flowers covered with purple spots and accentuated with a magenta lip, this is not an easy species to grow. Stick to its hybrids to get the visual effects of the species without its demanding cultural requirements.
- ***Cattleya luteola:*** This darling plant (see Figure 11-16) only reaches 5 to 7 inches (12 to 17.5 cm) tall, making it perfect for small spaces. Its fresh, floral-scented, 2-inch (5-cm), pale yellow flowers with a darker lip are borne in sprays of two to five in the spring.

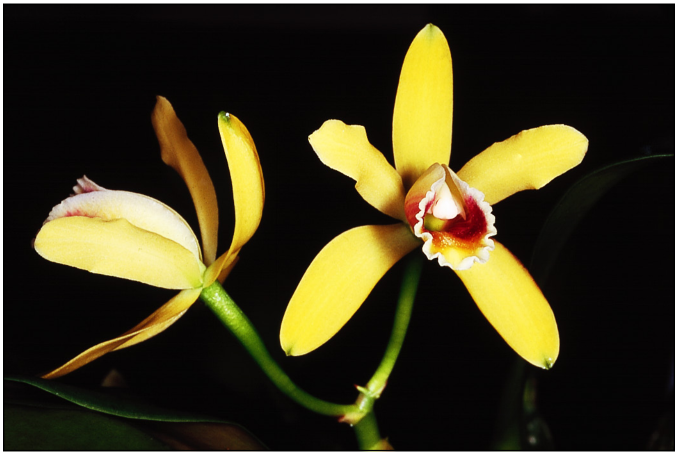

FIGURE 11-16: *Cattleya luteola* is a cutie with a fresh floral scent that is strongest in the morning.

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- ***Cattleya walkeriana:*** This diminutive orchid has a lot going for it. It has a miniature stature, making it ideal for growing under lights or on a windowsill. Its rose-purple flowers of heavy substance have a fine shape and an exquisite vanilla and sweet floral fragrance that is strongest in the morning. It's also found in an *alba* (white) that tends to have the best flower form.
- ***Laelia briegeri* (now called *Cattleya briegeri*):** This is a miniature bright-yellow species that isn't easy to grow by itself but has been valuable for its color and dwarf growing habit that it imparts to its hybrids.
- ***Laelia pumila* (now called *Cattleya pumila*):** This is another important contributor for its compact growth habit, flower form, and color.

- ***Sophronitis coccinea*** **(now called *Cattleya coccinea*):** The shimmering red color and miniature plant habit made this plant an important link. Refer to Figure 11-12 to see a species, *Sophronitis grandiflora,* that looks very much like this one.

Naming some of their prized children

Here are some of the many hybrids produced by the parents in the preceding section:

- ***Brassocattleya* Binosa:** This hybrid (see Figure 11-17) combines a striking color combination, 3-inch (5-cm) bright-green flower with a white flared lip, dusted with purple speckles, and a sweet spicy evening perfume inherited from one of its parents, *Brassavola nodosa.*

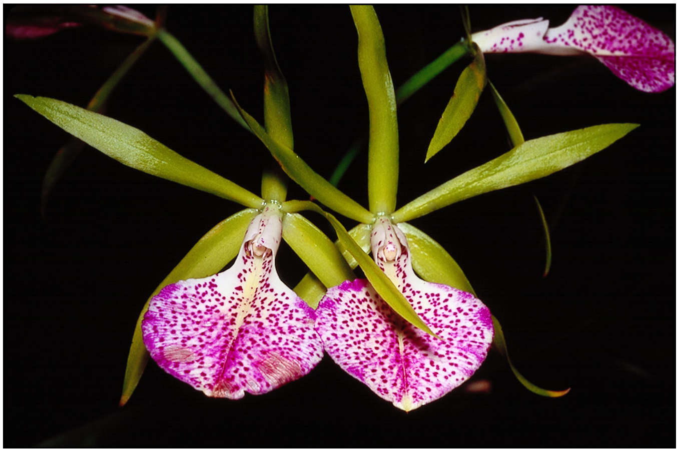

FIGURE 11-17: *Brassocattleya Binosa* 'Kirk' AMAOS combines a sweet scent with a striking color combination.

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- ***Brassocattleya* Cynthia (now called *Rhyncholaeliocattleya* Cynthia):** An offspring of *Cattleya walkeriana,* this variety is very compact, has 4-inch (20-cm) full, round-pink fragrant flowers with yellow in the throat. It frequently blooms twice a year. The color insert has an example.
- ***Cattleya* Brabantiae:** One of the first hybrids to be made, in the 1800s, this one has *Cattleya aclandiae* as one of its parents. Its 2½-inch (6-cm), thick, waxy, pink, fragrant flowers are spotted with maroon and serve as a backdrop for a stunning white lip and column edged in purple. It only grows to 6 to 8 inches (15 to 20 cm) tall and is still popular today.

- ***Cattleya* Peckhaviensis:** This orchid (see Figure 11-18) shows off purple spotted flowers with a bright-pink lip much like one of its parents, *Cattleya aclandiae.*

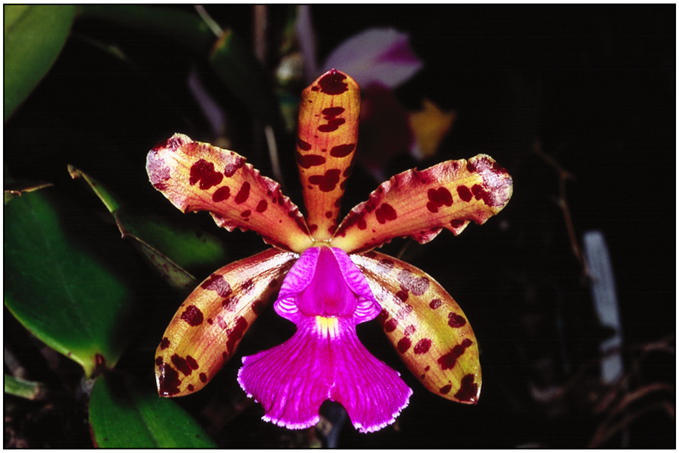

FIGURE 11-18 *Cattleya Peckhaviensis* shows its spots and bright magenta lip from *Cattleya aclandiae.*

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- ***Laeliocattleya* Angel Love:** This easy-to-grow fragrant hybrid (see Figure 11-19) has perfectly formed, 4-inch (10-cm), lavender-pink flowers with a frilled lip and yellow in the throat.

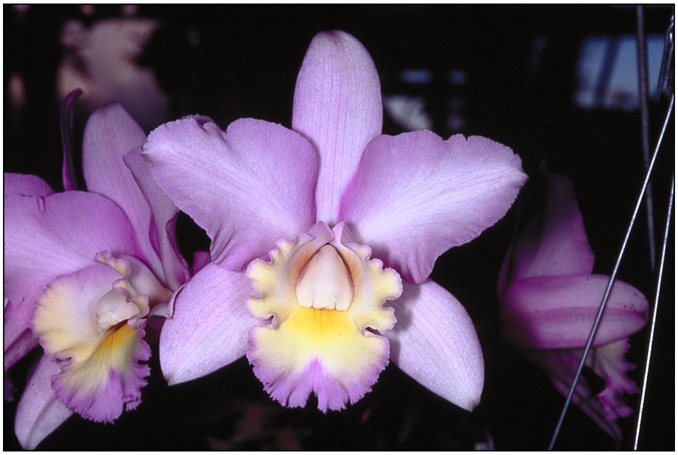

FIGURE 11-19 *Laeliocattleya* Angel Love is a perfectly shaped dwarf cattleya with a citrus fragrance.

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- ***Laeliocattleya* Love Knot:** Another *Cattleya walkeriana* child, this is a very small grower, with large 4-inch (10-cm), deep-red-purple flowers with a darker lip. This one is also fragrant and blooms twice a year.
- ***Laeliocattleya* Mini Purple (new name *Cattleya* Mini Purple):** An offspring of *Laelia pumila* and *Cattleya walkeriana,* this is one of the best known and available of the minicatts. It has lavender flowers with a darker purple lip and is fragrant.
- ***Sophrocattleya* Beaufort (new name *Cattleya Beaufort*):** A classic that has as a parent Cattleya luteola, this orchid is found in various shades of orange and red. It continues to be used extensively as a parent to produce new miniature hybrids.
- ***Sophrocattleya* Crystelle Smith (new name *Cattleya* Crystelle Smith):** This one frequently wins ribbons at shows because of its fine form and delicious color combinations that can vary from pastel pink to apricot shades with lips of solid yellow or marked with red.
- ***Sophrolaelia* Psyche (now called *Cattleya* Psyche):** Another veteran, this is a miniature with petite flaming orange-red flowers passed on from its parent. Fortunately, it's easy to grow.
- ***Sophrolaeliocattleya* Jewel Box (now called *Cattlianthe* Jewel Box):** See the section, "Hot reds and oranges," earlier in this chapter.
- ***Sophrolaeliocattleya* Mahalo Jack (now called *Cattleya* Mahalo Jack):** I've enjoyed growing this orchid that has a solid red flower on a dwarf plant. Most are fragrant and bloom a few times a year.

IN THIS CHAPTER

- Seeing the advantages to growing lady's slippers
- Helping your lady's slipper to feel at home
- Choosing the right lady's slipper for you

Chapter 12

Lovely from Flower to Root: Lady's Slipper Orchids

Lady's slippers aren't difficult to grow and are among the most rewarding orchids you'll find, making them a great orchid for beginners. They present a wide range of strikingly colored, frequently glossy flowers in myriad shapes. Some have petals that are elegantly twisted, whereas others are marked with hairs and warts. All slipper orchids are noted for very-long-lasting blooms — the flowers usually last six to eight weeks. Many slipper orchids have gorgeous marbled foliage, which makes them stunningly beautiful, even when they aren't in bloom. Collectors of slipper orchids tend to be a fanatic lot — and it's easy to see why.

TECHNICAL STUFF

The official name of this group is *Paphiopedilum* 'Asian Lady's Slipper,' but you'll probably hear them referred to as lady's slippers, just plain slipper orchids, or "paphs" — though they're anything but plain. These orchids got their common name because of their pouchlike lip, or *labellum,* which resembles a lady's slipper (see Figure 12-1).

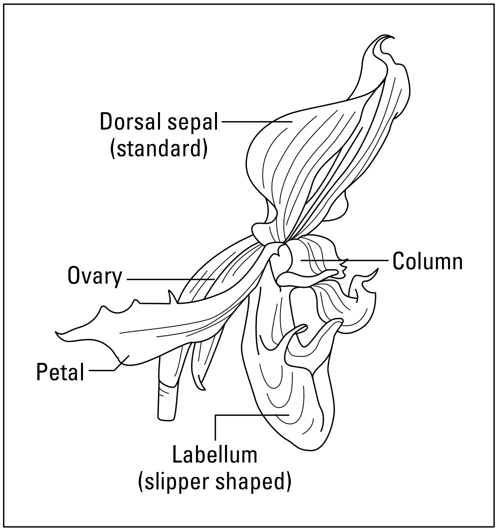

FIGURE 12-1: The parts of a lady's slipper orchid.

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In this chapter, I introduce you to the world of lady's slipper orchids — giving you some slipper-specific growing tips, some suggestions of varieties to buy, and some tips on which hybrids are your best bet.

Slipping into a Lady's Slipper

Lady's slippers are wonderful flowers for beginning and experienced orchid growers. In this section, I fill you in on why you should consider growing one, what kind of environment to give a lady's slipper after you bring it home, and how best to encourage your lady's slipper to bloom.

Seeing what lady's slippers have to offer

Lady's slippers are extremely popular among orchid growers — professional and amateur alike — because

- They display a great diversity of flower forms.
- Many are easy to grow.
- Many have beautiful foliage.
- Most have very-long-lasting flowers, usually lasting many weeks.

Giving your lady's slipper a good home

Although lady's slipper orchids are found in cold climates in North America, the ones that are most commonly grown indoors are the ones from the old-world tropics, like Southeast Asia. Almost all lady's slippers grow well in average home temperatures — 65°F to 75°F (18°C to 24°C) during the day, and 55°F to 60°F (13°C to 18°C) during the evening — and have modest humidity requirements. (Chapter 15 discusses the hardier lady's slippers that grow in colder climates.)

Some of the lady's slippers are among the least demanding orchids when it comes to light, so they're very adaptable to growing on windowsills or under lights. (For more general orchid-growing details, check out Chapter 5.)

Getting lady's slippers to bloom

Lady's slipper orchids are some of the easiest of all orchids to grow and bloom. That said, you can't force these plants to flower if they're not mature or if it isn't their normal time of year to bloom. If your slipper orchid hasn't bloomed in more than a year, and it needs a little nudging, try this three-step method:

1. **Grow your lady's slipper in a little brighter spot (see Chapter 5 for more details about orchid light needs).**

   If you don't see the flower buds forming in six to eight weeks, keep it in this same location and move to Step 2.

2. **Drop the temperature at night about 20°F (12°C) cooler than the daytime temperature.**

   If you don't see buds forming in six to eight weeks, move it back to its regular growing temperature and then move to Step 3.

3. **Let your lady's slipper get a little drier than usual for six to eight weeks.**

Straight from Nature: Bumps, Warts, Hairs, and All

Lady's slipper *species*, which is what the plants are called as they come from the wild, display an exotic array of nature's work. In the following sections, I give you a sampling of some of the easier-to-grow of the more than 60 commonly found lady's slipper species.

Paphiopedilum bellatulum

Although *Paphiopedilum bellatulum* isn't the easiest to grow of all lady's slippers, it isn't difficult if you just keep in mind that these plants prefer to be a little cooler and drier than the other lady's slippers.

This orchid is commonly called the egg-in-a-nest orchid because that's what its white pouch looks like as it's surrounded by its rounded-white with burgundy-spotted petals. The thick leaves of this dwarf grower (only a few inches high) are beautifully patterned (see Figure 12-2).

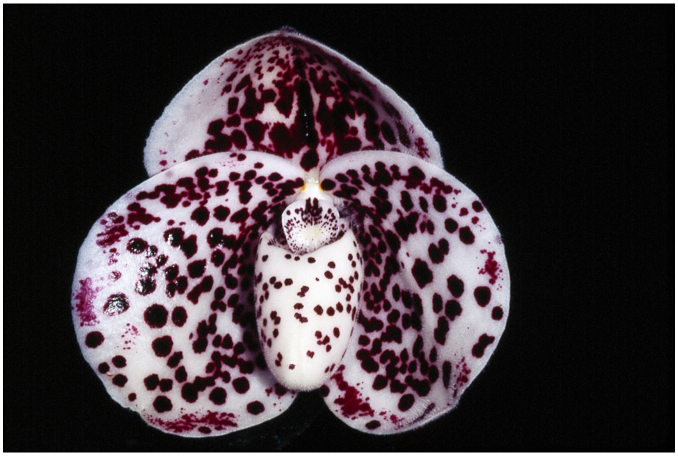

FIGURE 12-2: *Paphiopedilum bellatulum* is a compact-growing horticultural gem.

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Paphiopedilum callosum

Paphiopedilum callosum was the first lady's slipper orchid that I grew, more than 30 years ago. I had imported it from Thailand (when importing was easier to do), and seeing it bloom for the first time was a thrill! It continued to perform on a regular basis.

This orchid is one of the simplest to grow and one of the most dependable to bloom. It comes in various flower shapes and color combinations of burgundy and green (see Figure 12-3). Its strong constitution and attractiveness make it very popular as a parent in hybridizing. This species is quick to multiply, so it'll give you a large plant in a relatively short time.

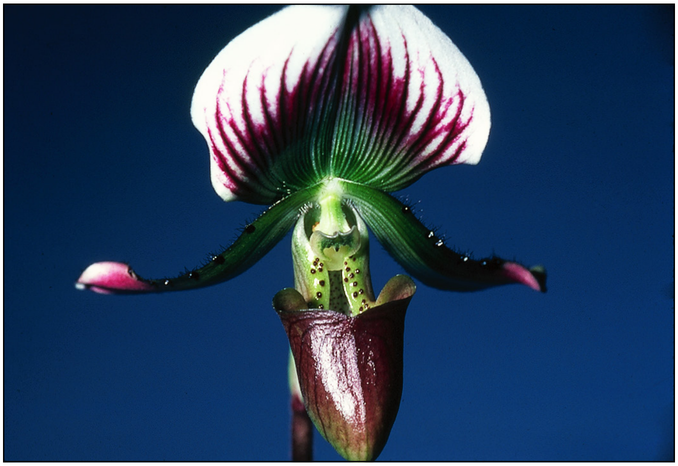

FIGURE 12-3: *Paphiopedilum callosum* is as dependable a bloomer as you can find.

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Paphiopedilum delenatii

Paphiopedilum delenatii is a delicate-looking, prized beauty. I used to find this orchid a bit on the temperamental side when it came to growing. Fortunately, the newer forms on the market today have more vigor and aren't as finicky as they once were. Mine blooms dependably each spring, bearing one or two elegant light pink petal flowers with a darker pink pouch (see Figure 12-4). Unlike most lady's slippers that are scentless, this one possesses a subtle and delightful citrus fragrance.

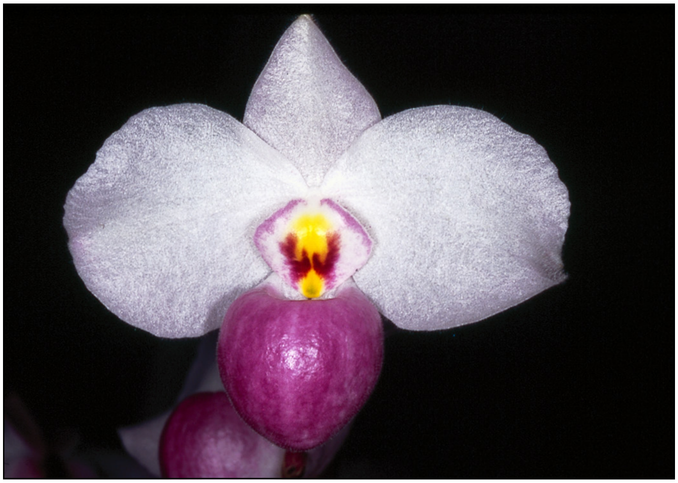

FIGURE 12-4: *Paphiopedilum delenatii* displays special elegance.

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A CONSERVATION SUCCESS STORY

The history of the discovery and collection of orchids is littered with dismaying accounts of humanity's destruction of habitats resulting from the careless and greedy collection of these plants from their native lands. Encouragingly, this isn't always the case.

Paphiopedilum delenatii was first discovered in Vietnam in 1913 by a French officer. From the plants collected and exported at that time, only a few survived. One of them was grown by the famous French orchid nursery of Marcel Lecoufle, who successfully produced seeds from it. Shortly after, no more of the plants of this species were able to be found in the wild. For generations, all the plants of *Paphiopedilum delenatii* that were known were those resulting from these seedlings form Marcel Lecoufle!

Now it's a commonly grown and admired species.

Paphiopedilum dianthum

Paphiopedilum dianthum is a Chinese species that is relatively easy to grow, needing just a modest amount of light — mine blooms consistently every year. This orchid puts on a floral display for many weeks. Its flowers have twisted green petals and a burgundy-brown pouch, topped with a white dorsal. The 12- to 16-inch (30- to 40-cm) leaves of this slipper orchid are glossy green with a leathery texture (see Figure 12-5).

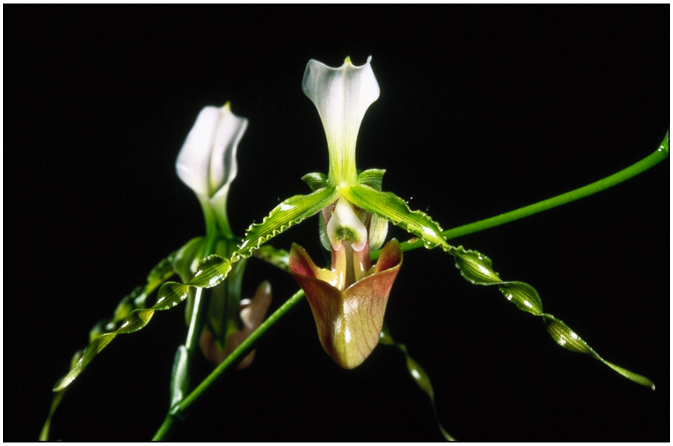

FIGURE 12-5: *Paphiopedilum dianthum* requires a very modest amount of light to grow and flower well.

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Paphiopedilum fairrieanum

The upswept petals and prominently marked dorsal of the *Paphiopedilum fairrieanum* present an exotic display (see Figure 12-6). This is another slipper orchid that is undemanding and can be quickly grown into a nice-sized plant. The most common form of this species has petals striped in greens and purples, but there are other color combinations that are yellow, dark red, and green —some have longer and narrower petals than the standard type. The albino form — green and white — is especially enchanting.

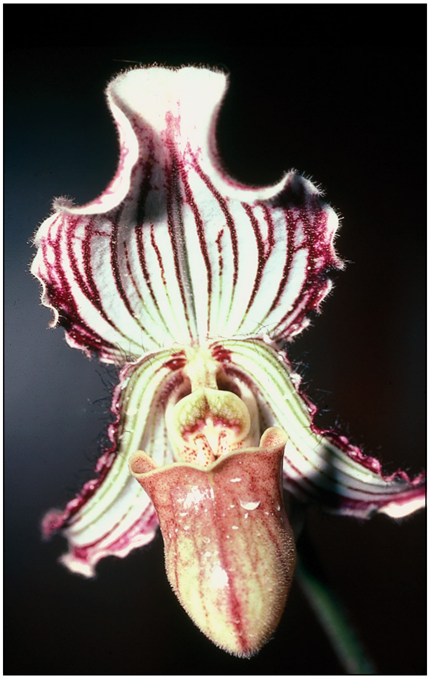

FIGURE 12-6: *Paphiopedilum fairrieanum* hails from the cliffs of India and Bhutan.

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TIP

Keeping the plant on the cooler, dryer side for six weeks during the winter will encourage it to put on its spring flower show.

Paphiopedilum glaucophyllum

Paphiopedilum glaucophyllum rewards you with a very long blooming period — its flowers open one at a time, so the plant can be in bloom for months. It has attractive blue-green foliage. Its fuzzy petals — green dorsal edged in white — and rosy pink pouch make quite a nice presentation (see Figure 12-7).

AN ORCHID WITH A HISTORY OF INTRIGUE

For more than 50 years during the late 1800s and early 1900s, the source of this treasured orchid, *Paphiopedilum fairrieanum,* remained a mystery. The only plant that was known had shown up in a shipment of unknown origin. In 1904, the famous orchid purveyor in England, Frederick Sander, offered a reward of £1,000 for anyone leading to the rediscovery of this orchid. This bounty was enough to bring results as new plants were discovered and exported from Bhutan and sold in the English orchid auctions for princely sums. Now this same horticultural gem is commonly available for indoor gardeners worldwide to enjoy at a very modest price.

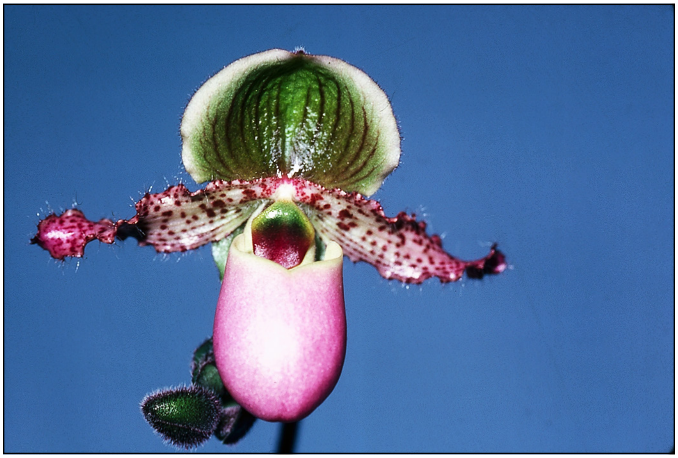

FIGURE 12-7: *Paphiopedilum glaucophyllum* is easy to grow and will reward you with months of bloom.

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Paphiopedilum hirsutissimum

Paphiopedilum hirsutissimum is another distinctive Asian beauty. It has long, lance-shaped, light-green foliage with purple-and-green-marked flowers with wavy edges (see Figure 12-8). It's a vigorous grower but can sometimes be a reluctant bloomer.

TIP

Some growers have found dropping the night temperature to 40°F to 45°F (4°C to 7°C) for several weeks in early winter may trigger flowering.

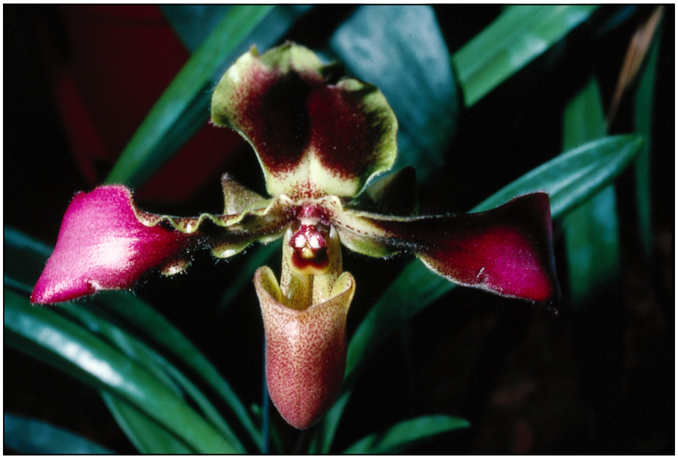

FIGURE 12-8: *Paphiopedilum hirsutissimum* grows in cooler spots than many of the other slipper orchids.

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Paphiopedilum spicerianum

Definitely one of my favorites, *Paphiopedilum spicerianum* puts on a dramatic display. Its shining white dorsal marked with a purple vertical strip up its center, surrounded by the shades of green and brown on its petals and pouch, make it a showstopper. Its white dorsal is so special that this slipper has been used frequently as a parent in breeding to impart this beautiful feature to its progeny. Turn to the color insert for an example of *Paphiopedilum spicerianum.*

Paphiopedilum sukhakulii

Some commercial growers lament that *Paphiopedilum sukhakulii* grows so quickly that they can't keep up with it. Most amateur orchid growers would *love* to have that problem. *Paphiopedilum sukhakulii* is a compact grower with prominently and attractively marked foliage. Figure 12-9 illustrates my plant in a 4-inch (8-cm) pot.

Its flowers offer a green-and-white-striped dorsal, wide-horizontal petals that are green with mahogany spots and sprinkled with warts and hairs, all set off with a dark maroon pouch. This species quickly forms a good-sized plant with many leads, and it frequently blooms more than once a year. See the color photographs in the center of this book for another example.

Paphiopedilum venustum

Paphiopedilum venustum was the first of the lady's slippers to be cultivated. Its handsome foliage makes it a standout even before its flowers, with distinctly veined lips and brightly colored petals, put on their show (see Figure 12-10). *Paphiopedilum venustum* is found in many different color forms.

FIGURE 12-9: *Paphiopedilum sukhakulii* is a compact-growing, undemanding, high-performing slipper orchid.

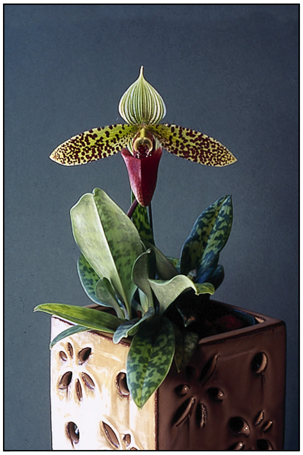

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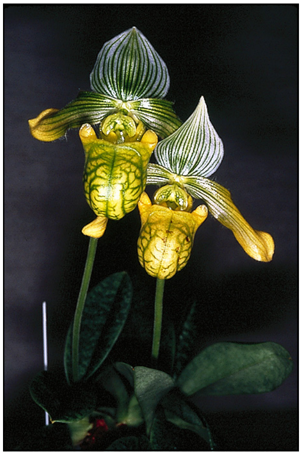
FIGURE 12-10: *Paphiopedilum venustum* is easily identified by its prominently veined lip or pouch.



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TIP

Letting the plants get a little drier in the winter than you would in the summer increases their likelihood of flowering.

One Step Removed from Nature: Primary Hybrids

Primary hybrids are the results of *crossing* (mating) two different species, like the ones I mention in the preceding sections, to create a new plant. In doing this, exciting new forms of orchids are created. The crossing process started in the

1800s and continues at full speed today. As new species are being discovered or better forms of the same species are showing up, the orchid breeder gets more new genetic material to play with. The results of some of these efforts are quite impressive.

The goals of breeding vary within the group, but the main purpose is to

- Expand the color range.
- Vary the flower shapes.
- Make the flowers larger.
- Create a new look.
- Make the plants more compact.
- Make the plants more vigorous and easier to bloom.

In the following sections, I introduce you to just a handful of some of the many great successes. It's fun to look at the parents and guess what the offspring will look like. There are plenty of surprises!

Some superior primary hybrids

These primary hybrids do their parents proud! Each of the following hybrids carries the good looks from its parents, but also adds its own new beauty and, in most cases, is more vigorous and easier to grow than either of the parents:

- ***Paphiopedilum* Angela:** From the photo of this variety (see Figure 12-11), can you take a guess what one of its parents is? Do you see the exotic touch from one of its parents, *Paphiopedilum fairrieanum* (refer to Figure 12-6)? Its other parent is a darling white species that can be a bit difficult to grow well, *Paphiopedilum niveum.* When these two are mated, the offspring — *Paphiopedilum* Angela — is a delightful compact-growing plant, easier to grow like *Paphiopedilum fairrieanum,* but with the delicate white coloring from *Paphiopedilum niveum.*
- ***Paphiopedilum* Armeni White:** Another good choice, this hybrid has extremely dark-green patterned foliage and a large, soft-white flower.
- ***Paphiopedilum* Delophylum:** This is an enchanting orchid with soft pink flowers, borne sequentially, on compact plants with attractively marked foliage.

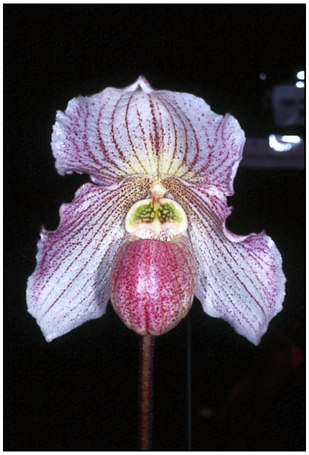

FIGURE 12-11: *Paphiopedilum* Angela has a charming flower on a compact plant.

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- ***Paphiopedilum* Fumi's Delight:** This is another case where two fetching but sometimes-tricky-to-grow species, when mated or crossed, yield a more vigorous offspring than either of the parents. One parent has a bright yellow flower *(Paphiopedilum armeniacum);* the other *(Paphiopedilum micranthum)* has a pink bloom. The offspring of these parents have flowers varying in color from creamy yellow to light pink (see Figure 12-12). Another somewhat similar sunny yellow hybrid is *Paphiopedilum* Yellow Butterfly. See the color insert.

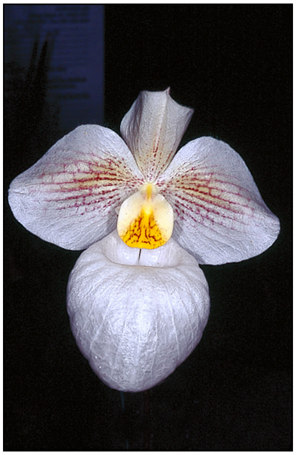

FIGURE 12-12: *Paphiopedilum* Fumi's Delight is a popular primary hybrid.

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- ***Paphiopedilum* Ho Chi Minh:** This is a newer hybrid that is highly sought after. One of its parents is *Paphiopedilum vietnamense,* a gorgeous dark pink slipper recently discovered, and the other is *Paphiopedilum delenatii,* an elegant soft pink flowered slipper (refer to Figure 12-4). This should be a winning match. Another couple of beautiful primary hybrids that share a parent, *Paphiopedilum delenatii*, are *Paphiopedilum* Joyce Hasagawa and *Paphiopedilum* Lynleigh Koopowitz. See the color insert for photos.
- ***Paphiopedilum* Gloria Naugle:** This orchid is the result of crossing the largest-flowered and king of the slippers, *Paphiopedilum rothschildianum,* with *Paphiopedilum micranthum.* This hybrid inherits the bold stripes from *Paphiopedilum rothschildianum* and the hot pink from its other parent. The results are quite striking (see Figure 12-13).

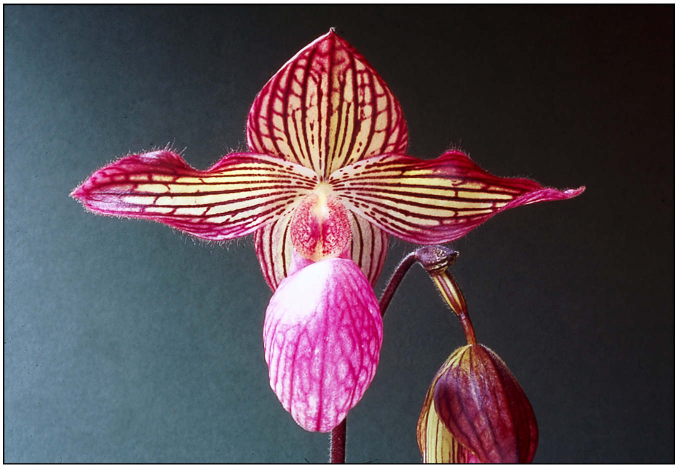

FIGURE 12-13: *Paphiopedilum* Gloria Naugle presents an arresting picture.

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- ***Paphiopedilum* Magic Lantern:** One of the most popular primaries, Magic Lantern, is a dependable grower and bloomer and its dark pink to red-pink flowers always elicit *oohs* and *ahs*. (See the color insert.)
- ***Paphiopedilum* Makulii:** Although not literately a primary, this orchid is very close to it. This hybrid takes the dramatic petal markings from *Paphiopedilum sukhakulii* (refer to Figure 12-9) and combines them with the darker flower colorations of its Maudiae hybrid cousins (see the section “Marvelous Maudiaes,” later in this chapter). This lady’s slipper is a snap to grow.
- ***Paphiopedilum* Saint Swithin:** Another hybrid — with one of its parents being the huge *Paphiopedilum rothschildianum* — this orchid is combined with another impressive bloomer, *Paphiopedilum philippinense,* which has a smaller

growth habit and a history of being easier to flower. The result is striped flowers with dangling twisted petals — nothing less than extraordinary (see Figure 12-14). This is a larger lady's slipper than some of the others, but it's well worth the growing space! This one does require more light that the other slippers mentioned earlier. Grow in the same medium to bright light you provide cattleyas and it will be happy.

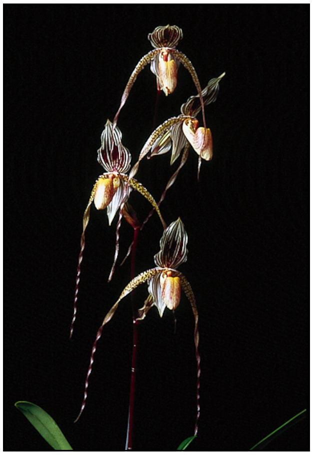

FIGURE 12-14: *Paphiopedilum* Saint Swithin puts on a spectacular show!

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- ***Paphiopedilum* Transvaal:** This is a classic beauty first bred in 1901 and still popular today. It takes its stateliness from *Paphiopedilum rothschildianum* but reduces its size and adds ease of blooming from its other parent, *Paphiopedilum chamberlainianum.* This is another orchid that likes it bright, like Saint Swithin.
- ***Paphiopedilum* Vanda M. Pearman:** One of the most popular of all primary hybrids, Vanda M. Pearman has large light pink flowers dusted with dark burgundy spots, all shown off against thick, leathery, gorgeously marbled foliage (refer to Figure 12-15). This is a must-have lady's slipper.

Marvelous Maudiaes

What a fabulous group of lady's slippers these are. The word *Maudiae* is the name given to one of the first hybrids made, in 1901, between *Paphiopedilum callosum* (see the color insert for an example) and *Paphiopedilum lawrenceanum. Paphiopedilum* Maudiae and its offspring are noted for their exceptional vigor, ease of blooming (sometimes more than once a year), undemanding growing requirements, gorgeous foliage, and striking, gloriously colored flowers. They're found in three major color groups or combinations, which I cover in the following sections.

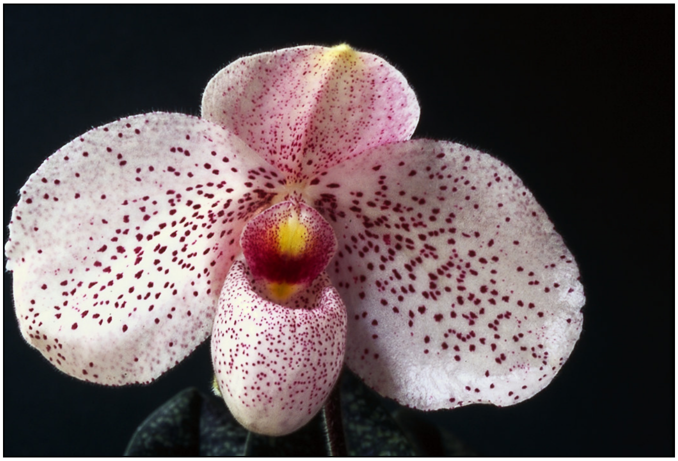

FIGURE 12-15: *Paphiopedilum* Vanda M. Pearman is admired for its elegant flower and attractive foliage.

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Green-and-whites

Green-and-white Maudiaes are occasionally referred to as *albinos* because they lack the more commonly found red pigment. These flowers have a simple timeless elegance. They're highly revered in Europe as cut flowers. Two famous clones are as follows:

- ***Paphiopedilum* Claire de Lune 'Edgard van Belle' AM/AOS:** Some super clones exist within this group like this one (see Figure 12-16). Its regal name fits its aristocratic look. Its huge impressive flower stands proudly above dark green handsome foliage. I received a division of this plant from a now deceased dear friend, Frances Nelson. It's a treasured memory of him, and I've shared divisions of it with special friends. It's a vigorous grower that still wins ribbons for me at orchid shows.
- ***Paphiopedilum* Maudiae 'The Queen' AM/AOS:** This is another famous clone. If you're fortunate to find these clones at a price you can live with, snatch them up. If they're too pricey for you at this point, try any of the standard green-and-white Maudiaes. None of them will disappoint you. (Check the color insert for an example.)

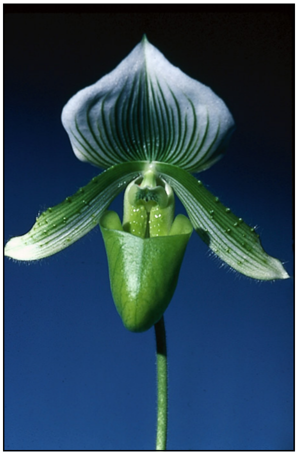

FIGURE 12-16: *Paphiopedilum* Claire de Lune 'Edgard van Belle' AM/AOS is a prize for anyone's orchid collection.

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Coloratums

This group is typified by a large dorsal and petals displaying streaks of purple in the flowers. The flower shape of this type looks very similar to the green-and-white Maudiae but has much more red and burgundy markings. (Notice the wide dorsal and the streaks of darker color throughout the flower in Figure 12-17.) Many times the dorsal is larger and rounder.

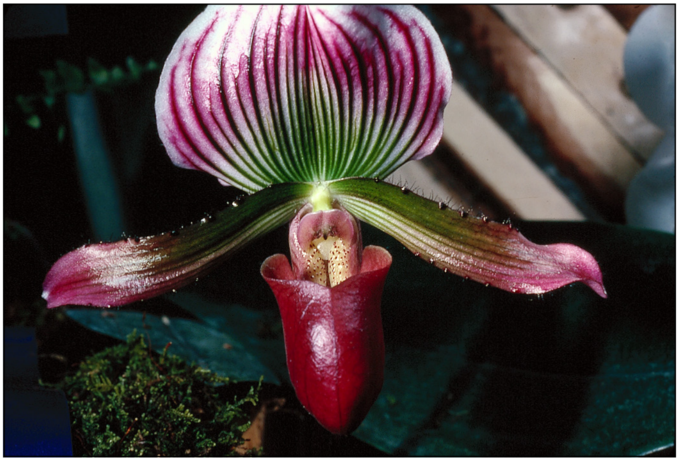

FIGURE 12-17: A coloratum type.

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Vinicolors

The flowers of this type look like they've been varnished. They're a rich dark red or purple and have many admirers. This is probably the most sought after form of the Maudiae types. Their solid burgundy to mahogany blossoms shine (see Figure 12-18).

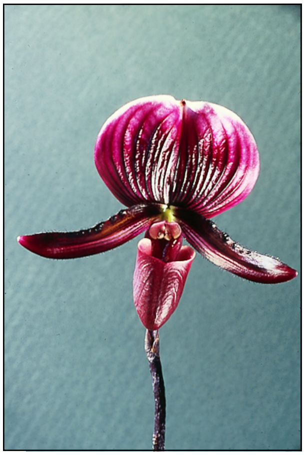

FIGURE 12-18: A vinicolor showing solid dark coloration over the entire flower.

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There are many good vinicolor varieties out there — too many to list. If you're lucky enough to actually see them in bloom, you can choose the ones that you like best. Unfortunately, because they're popular and are quickly snatched up, you may be forced to pick out blooming-size plants or ones in bud so you aren't sure what they'll look like when they bloom.

A fine example is Paphiopedilum Hsinying Fairbre. Check out the color insert for a photo.

TIP

Here are two ways to increase your odds for buying the best:

- **Check out their parents.** Several orchid parents have a good reputation for producing high-quality offspring. Here are some to look for:
  - Black Cherry
  - Blood Clot (Ugh! What a name!)
  - Dragon Blade
  - Eric Meng
  - Hillsview Draconis
  - Laser
  - Macabre

- Raisin Pie
- Red Fusion
- Red Glory
- Ruby Peacock
- Web Impulse

» **Look at the color of the leaves, flower stem, and bud.** The darker the purple in the newest leaves, the undersides of the leaves, the flower stem, and the buds, the greater the likelihood that the flower will also carry this dark pigment.

Huge and round: Modern hybrid lady's slippers

These lady's slippers are sometimes called "bulldogs" or "toads." To tell you the truth, I don't know how they got branded with such odd nicknames! They look nothing like these two creatures to me. They sport wonderful huge flowers that last for weeks.

Another moniker for them is *complex hybrids*, and this makes sense, because their parentage is very convoluted, many times consisting of 20 or more parents.

All the orchids in this group have plain green foliage and most of their flowers are huge and mostly round (see Figure 12-19). They're basically categorized by their flower colors: spotted, green, white, yellow, red, pink, and shades of these colors. A spotted one of mine that has been a delight is *Paphiopedilum* Langley Pride 'Burlingame' HCC/AOS (see the color insert for an example).

The whites have been particularly elusive in this quest for perfection. An older hybrid, *Paphiopedilum* F.C. Puddle (see Figure 12-20), doesn't match many of today's hybrids in terms of size and shape but is still in many collections today because it's a charming dependable grower and bloomer.

Paphiopedilum Ruby Cabochon 'Deluxe,' *Paphiopedilum* Thunder Doll 'Palendrome,' and *Paphiopedlium* Olympic Emerald 'Sasquatch' are all great examples of state-of-art modern complex paphiopedilum hybrids. See the color insert for photos of each.

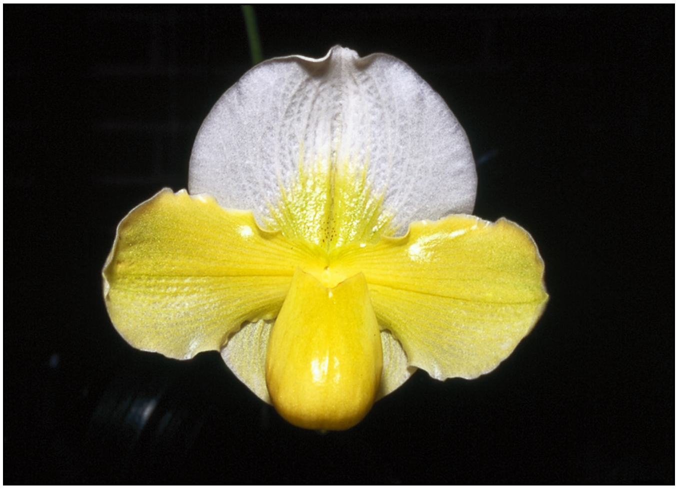

FIGURE 12-19: A modern complex hybrid showing its full, round flower.

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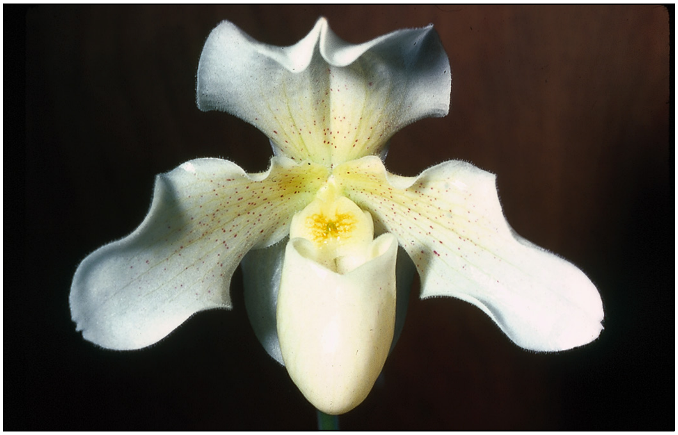

FIGURE 12-20: *Paphiopedilum* F.C. Puddle is an older white hybrid still appreciated today.

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A different kind of slipper orchid

All the slipper orchids in this chapter are tropical ones found in the old-world tropics, mostly various parts of Asia. Another type of lady's slipper has been known about since the 1800s but is now witnessing a strong new interest by orchid lovers. This group is called phragmipediums or simply "phrags."

Phragmipediums call their home Central and South America. Many grow in the mountains and number more than 30 species. They have a similar growth habit to some of the paphiopedilums and have the same requirements for humidity and temperatures.

Culturally, they have some differences. In general, they like it wetter than paphiopedilums. In fact, they're commonly grown in platters of fresh water. This practice is unheard of with most other orchids! Also, they prefer more light — similar to cattleyas. These used to be expensive plants, but their prices have come down thanks, in part, to Hawaiian growers who have perfected their culture so they can now be grown to selling-size plants in record-breaking time.

Most of the flowers are twisted and dangling, are borne sequentially, and are found in shades and stripes of green and maroon. However, a few key exceptions exist:

- *Phragmipedium besseae* is bright red-orange to yellow.
- *Phragmipedium xerophyticum* is white with a touch of pink.
- *Phragmipedium schlimii* is a shade of pink as is *Phragmipedium fischeri.*
- But the absolute star of the show is a recently discovered marvel, *Phragmipedium kovachii,* with immense 7- to 8-inch (17.5- to 20-cm) magenta flowers. (See the nearby sidebar for more on this special plant.)

Although growers have always been interested in the *Phragmipedium* species, everyone is talking about the hybrids. These newer hybrids are more vigorous and easy growing then most of the species and are becoming available in a broad range of colors. Many new ones are on the horizon but here are a few to look out for:

- ***Phragmipedium* Andean Fire** has attractive dark red 3½-inch (8.9 cm) flowers on tall flowering stems.
- ***Phragmipedium* Cardinale** is a classic hybrid that reliably produces many pink flowers.
- ***Phragmipedium* Hanne Popow** has delightful small pink flowers and is an old favorite that is still offered and is frequently used as a parent to produce newer hybrids. See the color insert for a photo.
- ***Phragmipedium* Fritz Schomburg** has pastel coral to orange flowers This hybrid bears successive flowers that that can go on for two to three months.
- ***Phragmipedium* Jason Fischer** has eye-popping brilliant, broad, flat red flowers.
- ***Phragmipedium* Sorcerer's Apprentice** has broad foliage with very large and dramatic flowers with twisted petals in shades of green, brown, and burgundy.

NEW PHRAG CREATES A SCANDAL!

Phragmipedium kovachii was “discovered” in 2002 at a roadside vendor in northeast Peru by an American orchid enthusiast, J. Michael Kovach. He immediately recognized it as being exceptional and probably new to the orchid world. Kovach purchased this rare orchid and pirated it back to the United States, illegally, with grand visions of his name entering the annals of orchid history by having this “holy grail of orchids” named after him.

He rushed it to the orchid experts at Selby Botanical Garden, one of the world’s leaders in orchid research, to get it identified, documented, and officially described in Latin so it could be published in a botanical journal, thereby assuring that the orchid would be his namesake.

Now the fly in the ointment — the feds. They got word of Kovach’s “discovery” and orchids hit the fan. Kovach was indicted, and they threatened to fine Selby Botanical Gardens $100,000 (it was plea-bargained to $5,000 and three years’ probation). Selby botanists, administrators, and board members’ heads rolled.

Even though it was part of the plea bargain that the name of this orchid be reverted to an earlier proposed name, *Phragmipedium peruviana,* most orchid people think it will most likely never happen.

And the scandal goes on. In the spring of 2004 at a Miami orchid show, a vendor and orchid grower from Peru, along with another orchid vendor and grower from Texas, were arrested for selling and smuggling endangered orchids including plants of *Phragmipedium kovachii.*

So, as you can see, orchid mania is alive and well today.

This relatively new species has revolutionized the breeding of phragmipedium hybrids because as a parent it contributes some of its immense size and brilliant color to some of its cousins that were pretty drab in comparison.

Phragmipedium Noirmont and *Phragmipedium* Sorcerer’s Apprentice are a few dramatic examples of hybrids in this genus. See color insert.

IN THIS CHAPTER

- **Enjoying sprays of colorful flowers: Oncidiums**
- **Understanding the pansy orchids: Miltonias and their hybrids**
- **Knowing the spider orchids: Brassias**
- **Discovering other Oncidium relatives**

Chapter 13

Dancing Ladies: Oncidiums and Their Relatives

This group of orchids is referred to as "dancing ladies" because the lips of many of them are flared like a flounced dancing gown, and the tops of the flowers, with a little imagination, look like the arms and head of a person.

Oncidiums are a joyful bunch of orchids that frequently display a flurry of flowers in the sunny yellow to orange and brown color range, although there are some in shades of pink, red, and green. They've been popular since they were first introduced into England from South America in the late 1700s.

In this chapter I introduce some of the stars in this group, which you can see includes many other genera in addition to *Oncidium.* I also give you some pointers on how you grow and flower them successfully. You'll soon realize that at least some members of this group deserve a place in your orchids collection. Some of them get to be quite large plants whereas other are miniatures. If you want to see some of these beauties in color, flip to the color insert.

Taking a Closer Look at the Ladies

Hundreds of oncidiums are in existence, but just a handful are grown with regularity today. In general, they can be grown in the same conditions as cattleyas (see Chapter 5 for more details). I want to first present the oncidiums from the wild and ones that have been hybridized. Then I move on to their relatives.

Oncidiums from the wild

Many oncidiums from the wild are used in producing hybrids (see the following section, "Hybrid oncidiums"). Here are a few species, among the many that are worth looking for:

- ***Oncidium amplicatum* (now called *Rossioglossum amplicatum*):** When this orchid (see Figure 13-1) is in full bloom in the summer, it displays a shower of 1-inch (2.5-cm) brilliant yellow flowers on sprays up to 4 feet (120 cm) long. The pseudobulbs are short and circular and are sometimes referred to as being turtle-shaped.

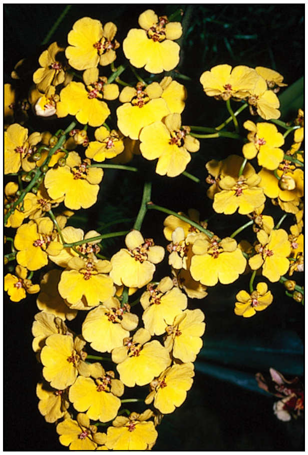

FIGURE 13-1: This orchid can fill up a windowsill with its shower of flowers.

- ***Oncidium cheirophorum:*** This dwarf-growing oncidium (it matures to about 3 inches [7.5 cm]) has ½-inch (1.25-cm) bright yellow citrus-scented flowers on an arching spray.
- ***Oncidium crispum* (now called *Gomesa imperatoris-maximiliani*):** A quite attractive oncidium with 3-inch (8-cm) rust red flowers and lips with yellow and orange markings on the lips. The flowers are borne on a long spray and

its leaves get to be about 6 to 8 inches (15 to 20 cm) long. Its flowers have a musty scent. See the color insert for a photo.

- ***Oncidium lanceanum* (now called *Trichocentrum lanceanum*):** Referred to as a mule-leaf orchid because its stiff leathery foliage takes on this shape, it has flat, long-lasting 2- to 2½-inch (6-cm) flowers of contrasting brown and yellow with a purple and white lip. The plant grows about a foot (30 cm) tall and has a strong honey scent when the plant is in the sunlight.
- ***Oncidium longipes* (now called *Gomesa longipes*):** This orchid (see Figure 13-2) is a dwarf-growing species from Brazil that blooms in the fall. Its cinnamon-scented flowers are ¾ to 1 inch (2 to 3 cm) across with dark yellow to reddish brown sepals and petals and bright yellow lips. It frequently blooms twice a year.

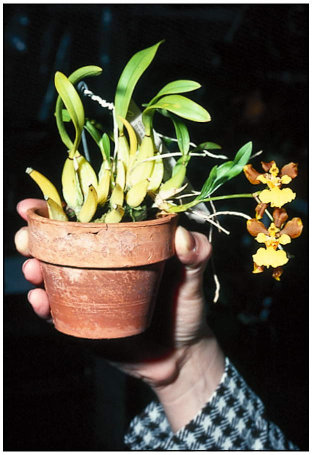

FIGURE 13-2: *Gomesa longipes* is a small-growing plant that is perfect for the windowsill.

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- ***Oncidium maculatum:*** This is a handsome species with 3-inch (8-cm) honey-scented yellow flowers prominently marked with mahogany spots on an arched 20-inch (50-cm) flower spike. It blooms best if it's grown on the dry side during the winter.
- ***Oncidium onustum* (now called *Zelkova onusta*):** Clear yellow flowers about 1¼ inches (3 cm) wide cover this miniature plant when it's in bloom in the fall. This orchid (refer to Figure 13-3) likes very bright light and should be grown on the dry side, especially right after flowering. To see a photo of a hybrid from this species (*Zelenkocidium* Kukoo) check out the color insert.

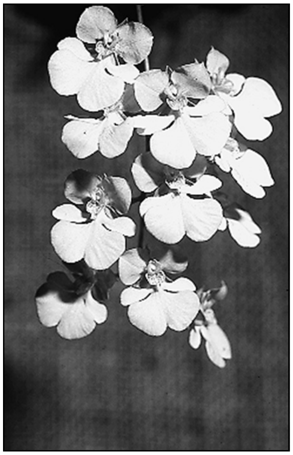

FIGURE 13-3: *Zelkova onusta* is a miniature grower with lemon yellow flowers.

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- ***Oncidium ornithorhynchum:*** This is one of my favorites! It's a miniature, easy-to-grow, and easy-to-flower orchid and rewards you with scads of ¾-inch (1.5-cm) flowers with pink to lavender blooms that have a fresh vanilla fragrance. The plant only grows 8 to 10 inches (20 to 22.5 cm), so it's perfect for a windowsill or under lights. It frequently blooms a few times a year.
- ***Oncidium splendidum* (now called *Trichocentrum splendidum*):** This one is splendid, indeed. From Guatemala and Honduras, this stately upright flower spike is 3 feet (1 meter) or more and is covered with 2- to 3-inch (5- to 7.5-cm) flowers that feature a broad bright yellow lip. Give this species a bright spot with plenty of growing room and let it dry off during the winter.

Hybrid oncidiums

As is the case with the other orchids mentioned in this book, there are many hybrids of oncidiums. The orchid breeders have extended the color range and ease of blooming with these hybrids:

- ***Oncidium* Nathakhun (now called *Trichocentrum* Nathakhun):** This is a larger-growing oncidium with foliage up to about 12 inches (30 cm) long. It shows much influence from one of it parents, *Oncidium lanceanum,* with its mule-ear foliage and its flat, honey-scented, long-lasting flowers of contrasting brown and yellow with a yellow lip.
- ***Oncidium* Sharry Baby:** This orchid (see Figure 13-4) is one of the most popular in the world! This particular variety outsells all the other orchids. Why? The number-one reason is that it has a very strong fragrance of chocolate or vanilla.

It also blooms more than once a year, often around Christmastime. A mature plant has hundreds of ½-inch (1.5-cm) yellow-overlaid-with-burgundy flowers with a flared white lip with purple markings. It's a bone-tough plant that will grow when others wimp out. My neighbor has one that I gave her and, with very little TLC, it performs dependably every year. This variety is available in many different color forms. As long as you have space for this one (it can grow more than 30 inches [75 cm] tall), you can't go wrong buying one.

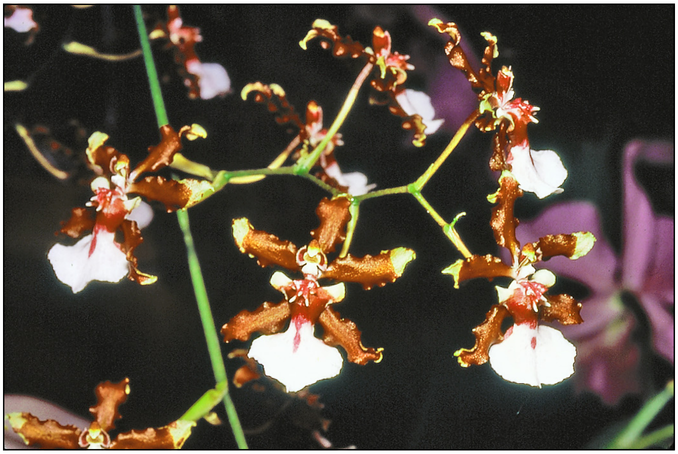

FIGURE 13-4: *Oncidium* Sharry Baby is a fast and easy growing and blooming hybrid with the fragrance of chocolate.

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- ***Oncidium* Tsiku Marguerite:** A very vigorous but small-growing (about 6 inches [15 cm] tall) hybrid that is sweet-scented. It produces densely branched sprays of ¾-inch (2-cm) cream to pink flowers. Another great beginner's orchid.
- ***Oncidium* Twinkle:** This is another star performer but with a quite different stature from Sharry Baby. Its parents, *Oncidium cheirophorum* and *Oncidium ornithrhynchum,* both mentioned in the previous section, are fragrant and dwarf. The resultant crossing is a hybrid that is even better than its parents — more vigorous and free flowering. I highly recommend this one for beginners. It's available in various color forms.

To see more dazzling oncidiums in flower see *Oncidium* Fort Point, *Oncidium* Matanda, *Oncidium wyattianum*, *Oncidium* Hallio-Crispum, and *Rhynchostele rossii* in the color insert.

Miniature oncidiums or tolumnias

Until fairly recently, the miniature plants that look very much like oncidiums were called *equitant* (or *variegata*). Plant *taxonomists* (people who name plants) are now in a huddle to decide whether or not these plants should be assigned to the genus *Tolumnia* rather than *Oncidium.*

Whatever name you want to call them, they're darling little plants that are easy to grow. They have triangular thick leaves and are grown best in a sunny spot with good air movement. They're often mounted on wood or cork (see Chapter 7) but can also be grown in pots. Because they're small plants in small containers (see Figure 13-5), you must keep an eye on them so they don't dry out too severely.

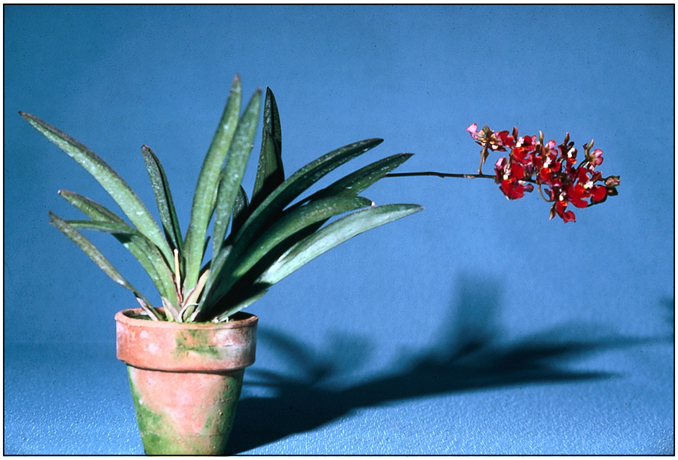

FIGURE 13-5: Tolumnias require little space to grow and bloom. This one is in a 3-inch pot.

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TIP

Many of these orchids bloom a few times a year and will flower more than once on the same flower spike, so don't cut off the flower spike until it withers.

So many hybrids are available within this group that choosing one over another is difficult. Just look in the orchid suppliers' catalogs, on their websites, or in their greenhouses in the miniature orchid or miniature oncidium or tolumnia section. They're all easy growers and prolific bloomers (see Figure 13-6). For photos of two other tolumnia hybrids, check out the color insert for *Tolumnia* Potpourri 'Scarlet' and *Tolumnia* Savanna La Mar 'Golden Galaxy.'

ONE PERSON'S WEED IS ANOTHER'S TREASURE

Goodale Moir is a well-known name in the annals of orchid breeding. He dared to love a group of oncidiums called *equitants* or *variegata oncidiums.* At the time, in the 1950s, many of his less-enlightened orchid-breeding friends derided these miniatures from the Caribbean as weeds. This didn't stop Goodale from pursuing his dream of breeding and developing these lovelies into small orchids of all colors and shades. While I was working at a botanical garden in Hawaii, in the 1970s, I was fortunate enough to meet him and his lovely wife, May, as his work was starting to be appreciated. Sadly, today, Goodale is no longer with us, but he left behind his proud legacy of these miniature horticultural gems.

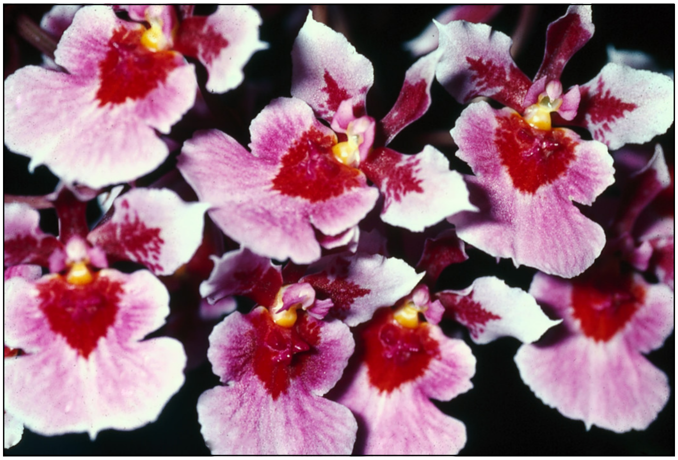

FIGURE 13-6: Even though tolumnias are small plants, they have quite a bit of flower power, as this pink and red hybrid proves.

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Pansy Orchids: Miltonias and Miltoniopsis

To see these orchids in bloom is to want them. True to their name, many of these orchids do have pansy-like faces, but they actually outdo the other garden plants with their colors and flower patterns. For some reason, these orchids haven't gotten their due attention for many years. They had a reputation for being difficult to grow. Most of the newer selections and hybrids are more vigorous, easy, and worth your effort to try.

TECHNICAL STUFF

It used to be that all the orchids in this group were called miltonias, but now most go by miltoniopsis. For more details on this name game, see the nearby sidebar.

These orchids have a flower structure similar to oncidiums. Figure 13-7 shows the miltonia flower structure.

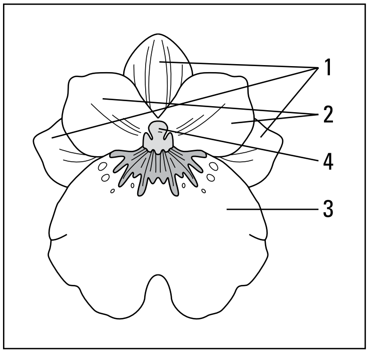

FIGURE 13-7: Miltonia flower structure: 1 = Sepals; 2 = Petals; 3 = Lip; 4 = Column.

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The following sections provide some tips to help you grow these lovelies and some recommendations for both miltonias and miltoniosis. They look very similar and both have gorgeous brilliant solid and patterned flowers, but they have slightly different growing requirements.

Growing them with success

Here are some guidelines that help you have more success with these beauties:

- **Miltonias like it a little warmer than miltoniopsis.** Miltonias like it up to about 84°F (29°C) during the day and around 55°F (12.8°C) during the evening. Miltoniopsis like it about 5°F to 10°F cooler for day and night temperatures.
- **Keep their roots damp but not wet.** Their fine root systems can easily be damaged by drying out. The catch-22 is that they can also be very susceptible to rotting if kept too wet. Use a fine-textured, well-drained potting material that also retains moisture.
- **If the leaves pucker in an accordion pattern, this signals the plant isn't getting enough moisture.** You can't do anything to undo the puckered leaves, but they really aren't harmful. They're just an indicator to provide more moisture.
- **Keep these plants in small pots.** That's an easy way to prevent overwatering.

YOU SAY MILTONIA; I SAY MILTONIOPSIS

The technical difference between these two is that all those orchids called miltonias have two, light-green leaves per pseudobulb and ears on the column in the center part of the flower. Miltoniopsis have one blue-green leaf per pseudobulb. Unless you're a taxonomist, the flowers look the same.

From a cultural point of view, miltonias are considered by some to be somewhat easier to grow because they're from Brazil, where it's warmer, whereas most of the miltoniopsis are from the cooler climes of Peru, Columbia, and Costa Rica so they can be more temperamental.

- **If the leaves are light green and standing upright, they're getting just the right amount of light.** If they're floppy and dark green, they're getting too little light. If they have a reddish cast, they're getting too much light.
- **Provide ample air circulation.** Otherwise, their thin leaves will get leaf spots from fungal disease.

Miltonias

Here are a few miltonias that are particularly striking and easy to grow:

- ***Miltonia flavescens:*** The light yellow color of the flower sets this species off from the other miltonias. Its flowers are about 3 inches (7.5 cm) across and have a white lip with red spots.
- ***Miltonia regnellii:*** This is one of the most adaptable so it's one of the easiest of the miltonias to grow and bloom. For each erect stem, it has up to six white flowers that are about 2½ to 3 inches (6 to 7.5 cm) across with a purple-blue lip. It blooms in the summer to fall and has an orange-like fragrance.
- ***Miltonia spectabilis:*** One of the most popular and commonly offered miltonia species, it displays 4-inch-wide (10-cm-wide) flowers that are white tinged with pink. The lip is rose-pink with a purple column. This orchid grows to about 10 inches (25 cm) high and its flowers have a rosy fragrance. Another botanical variety, *Miltonia spectabilis* var. *moreliana,* has flowers of the same size but its sepals and petals are dark plum red with a contrasting large, bright rose-pink lip with darker veins. It's quite a looker!

- ***Miltonia* Goodale Moir:** A classic variety that is a namesake of a famous orchid breeder who lived in Hawaii, this miltonia hybrid likes warmer growing conditions and bears striking flowers with yellow petals spotted in burgundy and white lips brushed with a purple pink. *Miltonia* Goodale Moir is still frequently used as a parent to produce other warmth-loving miltonia hybrids. For a color picture of the hybrid, *Miltonia* Goodale Moir 'Golden Wonder,' check out the color insert.
- ***Miltonia* Anne Warne:** This is another time-proven, warmth-loving hybrid with gorgeous dark purple flowers with stunning purple-pink lips.

For color images of some of the other spectacular miltonia species and hybrids check out the color insert for *Miltonia moreliana*, *Miltonia spectabilis*, *Miltonia* Venus, and *Miltonidium* Dan Inouye.

Miltoniopsis

Some orchid growers have said that that miltoniopsis can be more difficult to grow than miltonias, but it really matters which ones you get. Some species like it cooler and others tolerate warmer conditions. The hybrids seem to be very forgiving and easy. Many hybrids have spectacular markings, like the newer one shown in Figure 13-8.

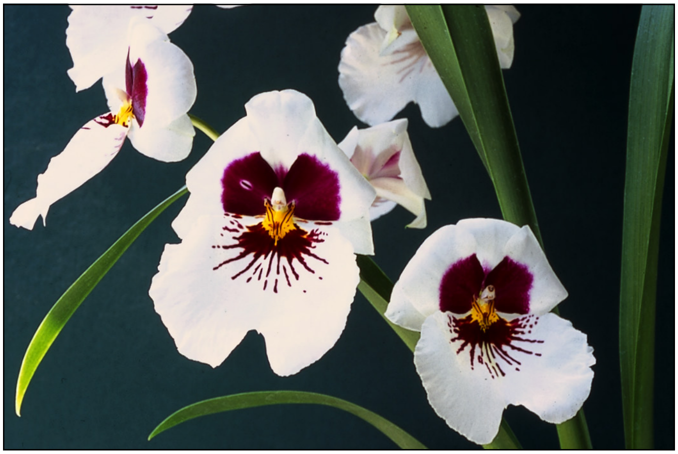

FIGURE 13-8: A white miltoniopsis hybrid with striking purple markings.

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Here are some others that should be on your list:

- ***Miltoniopsis phalaenopsis:*** This species is the one primarily responsible for the waterfall patterns in the lips of today's hybrids. It likes warm summers and cool winters and does best if it's kept on the dry side during the winter. Its flower, which has the perfume of lily of the valley, is 1¾ inches (4 cm) and white pansy-shaped with a purple waterfall pattern on the lip. The plant reaches about 6 to 12 inches (15 to 30 cm) high.

- ***Miltoniopsis roezlii:*** A cool-to-warm grower, this is another one of the easier-to-grow miltoniopsis. It has 2½-inch-wide (6.5-cm-wide) white rose-scented flowers with dark-purple spots on each of the petals and a white lip with bright yellow and orange markings. The plant reaches about 9 inches (22 cm) tall.
- ***Miltoniopsis santanaei*:** This orchid (see Figure 13-9) is a very rewarding plant that is easy to grow and flower, which it often does more than once a year. Its flower is 2 inches (5 cm) wide, pristine white, flat, pansy-shaped with a bright yellow flare on the top of the lip. It's a compact-growing orchid — only 6 to 8 inches (15 to 20 cm) tall. It has a very sweet rose scent and is used frequently in breeding for this fragrant quality and its ease of culture.

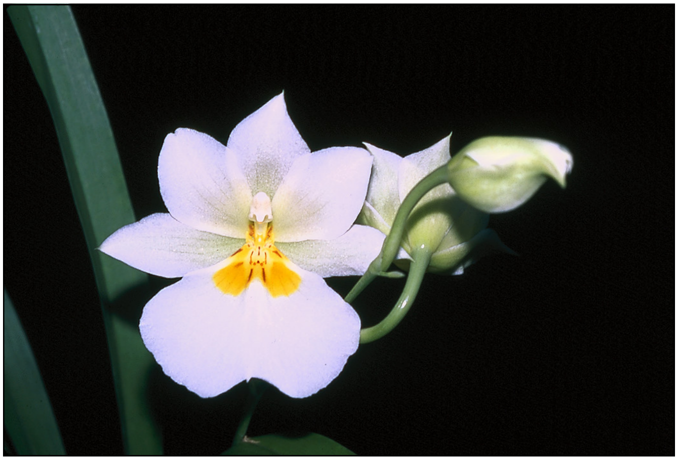

FIGURE 13-9: *Miltoniopsis santanaei* is a compact, easy-to-grow species well suited to growing on a windowsill or under lights.

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- ***Miltoniopsis* Bert Field:** Pure velvety red, this hybrid's flowers are about 3 inches (7.5 cm) across. They're perfectly formed and some have waterfall patterns. It's a classic variety that is still found and is used often as a parent.
- ***Miltoniopsis* Celle 'Wasserfall':** There are many new hybrid miltonias, but this was one (refer to Figure 13-10) of the first to show such a spectacular waterfall pattern in the lip. Its red velvet sepals and petals and yellow column complete a gorgeous picture. The flowers have a rosy floral scent.

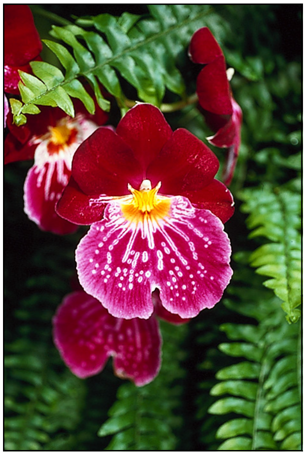

FIGURE 13-10: Miltoniopsis Celle 'Wasserfall' is definitely a showstopper.

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- ***Miltoniopsis* Hajime Ono:** Named after the noted Hawaiian miltoniopsis breeder, Hajime Ono, it has a magnificent 3½-inch-wide (9-cm-wide) dark-red velvety flower with a lip fantastically marked with a waterfall pattern. See the color insert for an image of this orchid.
- ***Miltoniopsis* Hamburg:** This is another famous cross that set the standard for quite a while for being one of the best of the solids reds. It has a light rosy fragrance.

For other eye-popping examples for miltoniopsis hybrids check out *Bratonia* Memoria Donald Christian, *Miltoniopsis* Maui Pearl, *Miltoniopsis santanaei,* and *Miltoniopsis vexillaria* in the color insert.

Other Members of the Club: The Oncidium Alliance

Many other orchids are related to oncidiums, and they're commonly referred to as being part of the Oncidium Alliance. In the following sections, I list some of the more prominent ones.

Orchid spiders: Brassias

Large flowers with long, leggy petals and sepals typify this group of orchids. Although some of the species and hybrids of brassias are popular, they are more commonly used as parents with other oncidium relatives to pass on their elegant flower shapes (see "Mixing It Up," later in this chapter). Here are a few standouts of the 15 or so species of brassias:

- ***Brassia longissima* (now called *Brassia arcuigera*):** This orchid (refer to Figure 13-11) features large spidery flowers about 7 to 8 inches (18 to 20 cm) from top to bottom that open greenish and turn orange over several days. The flowers are spotted maroon and have a sweet, candy scent. This is a tall grower that maxes out at about 30 inches (75 cm) tall.

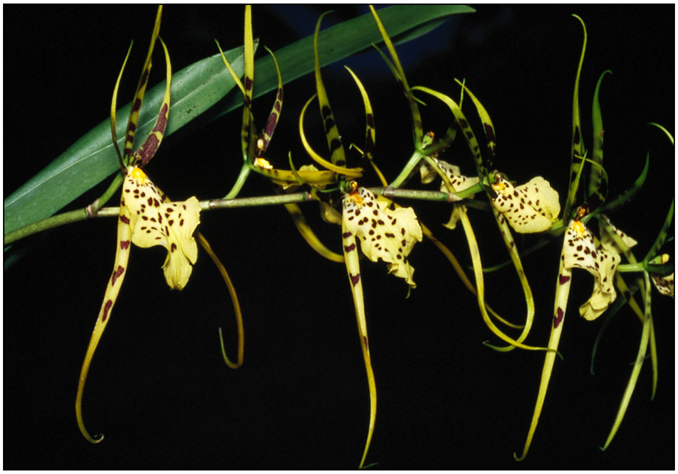

FIGURE 13-11: *Brassia arcuigera* 'Pumpkin Patch' is a fine selection of this species.

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- ***Brassia maculata:*** A commonly grown species, this orchid also follows the similar flower shape and color pattern of the other two species described in this list. It blooms in the summer and puts on a show of fragrant flowers for several weeks.
- ***Brassia verrucosa:*** Another spider-type flower that reaches about 6 to 8 inches (15 to 20 cm) across, this orchid is pale green and is spotted in darker green or brown with a white lip spotted with darker warts. This species is an easy one to grow. It has a musky scent.

Butterfly orchids: Psychopsis

This orchid used to be called an oncidium and then was reclassified to this genus. It doesn't take much imagination to see how this orchid got its common name, butterfly orchid, because the flower looks very much like this regal insect.

Psychopsis papilio (shown in Figure 13-12) is the most popular species in the genus and is an easy one to grow, requiring the same cultural conditions as oncidiums. It has reddish leathery leaves with darker spots; its flowers have thin, dark burgundy, upright sepals that look like antennae; the petals are barred dark red on yellow; and the lip is yellow with solid or spotted burgundy red edging. Another species, *Psychopsis krameriana*, is very similar.

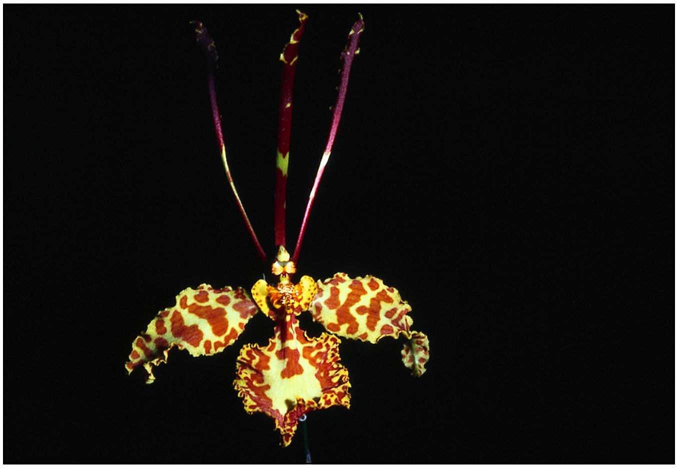

FIGURE 13-12: *Psychopsis papilio* has a butterfly look.

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TIP

The flowers are borne in succession, so don't cut off the flower spike until it shrivels.

Sigmatostalix

Sigmatostalix radicans (shown in Figure 13-13) is a dainty and charming miniature orchid, reaching about 6 inches (15 cm). It has grasslike foliage and small ¾-inch (1 cm) white flowers with greenish sepals and petals with a brown column and white lip. Its flowers have a sweet honey fragrance.

Trichopilias

Two orchids within the trichopilia genus are commonly grown:

- ***Trichopilia fragrans:*** This orchid is very similar to the next one and blooms in the spring to summer.

WARNING

NOT FOR BEGINNERS

The Oncidium Alliance has other genera — including baptisonia, cochlioda, comparettia, odontoglossum, rodriguezia, and trichocentrum — but many aren't noted for being easy to grow. Some are from cooler climates and require very high humidity. They have, however, played important roles as genetic building blocks to produce hybrids with all the other oncidium groups. See the "Mixing It Up" section for more details.

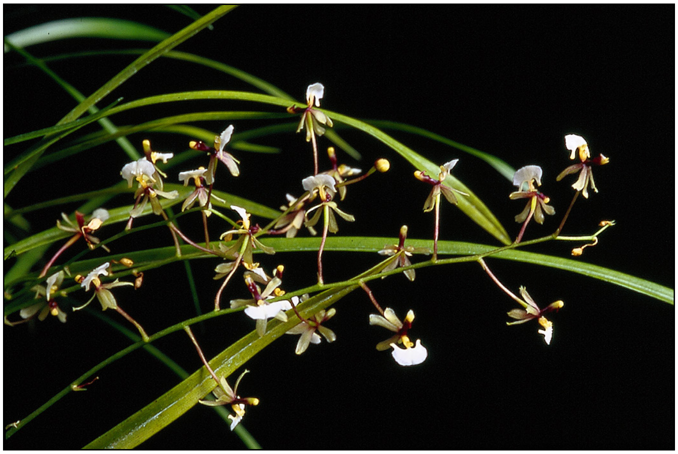

FIGURE 13-13: *Sigmatostalix radicans* is a miniature orchid with a honey scent.

Photo courtesy of Marc Herzog

- ***Trichopilia suavis:*** A native of Central and South America, this orchid has oblong pseudobulbs with leaves that can grow up to 16 inches (40 cm) long. It's frequently grown in a basket because the two to five fragrant flowers, white spotted with red, are borne on a pendulous flower spike. The lips of the flowers are tubular and have pink and orange spots.

Mixing It Up

Things really get interesting! Imagine taking all the orchids that I introduce in this chapter from the Oncidium Alliance, and many more that I haven't even mentioned, and mating or breeding them with each other. That's just what skillful orchid breeders in the United States have done — and the results have been astounding! Orchid names and their hybrids are nothing if not complex and sometimes confusing. Staying on top of them can drive you nuts! Here is a list of some hybrids made by using parents from various genera to create new genera. I'm sure this list will change.

Trying to make sense of these orchids

Knowing where to begin is difficult, because there are so many different ones. By the late 1990s, almost 10,000 of these hybrids had been registered and breeding efforts have continued at full tilt, so today there are many more.

In general, these orchids have wild color combinations and large flower counts and are durable, vigorous plants. They're competing with phalaenopsis for the public's favor.

TIP

These hybrids have a scrambled parentage. Table 13-1 helps you sort it out. This list includes some of the most common and popular *intergeneric genera* (ones that have parents from more than one genus) along with the genera that were used to actually produce these new intergeneric genera. I also give the abbreviations for the genera because you'll find that information written on the orchid label.

TABLE 13-1 Oncidium Alliance Intergenerics

Intergeneric Genus	Genera Used to Create This Genus	Abbreviation Used
Aliceara	*Brassia, Miltonia, Oncidium*	*Alcra.*
Beallara	*Brassia, Cochlioda, Miltonia, Odontoglossum*	*Bllra.*
Brassada	*Ada, Brassia*	*Brsa.*
Brassidium	*Brassia, Oncidium*	*Brsdm.*
Burrageara	*Cochlioda, Miltonia, Odontoglossum, Oncidium*	*Burr.*
Colmanara	*Miltonia, Odontoglossum, Oncidium*	*Colm.*
Degarnoara	*Brassia, Miltonia, Odontoglossum*	*Dgmra.*
Milpasia	*Miltonia, Aspasia*	*Mpsa.*
Miltassia	*Brassia, Miltonia*	*Mtssa.*
Miltonidium	*Miltonia, Oncidium*	*Mtdm.*
Odontocidium	*Odontoglossum, Oncidium*	*Odcm.*
Odontonia	*Odontoglossum, Miltonia*	*Odtna.*
Rodricidium	*Oncidium, Rodriguezia*	*Rdcm.*
Vuylstekeara	*Cochlioda, Miltonia, Odontoglossum*	*Vuyl.*
Wilsonara	*Cochlioda, Odontoglossum, Oncidium*	*Wils.*

Orchid breeders hybridizing these related orchids are working to impart the following qualities to their plants:

- More-compact growth and flowering habit
- Ease of flowering
- More tolerance for a wide range of growing temperatures
- Lower light requirements
- Blooming multiple times per year
- Bright, colorful patterns in the flowers

Check out these images of *Burrageara* Living Fire and *Rodricidium* Orchidom Dancer in the color insert for examples of this group.

When you visit your orchid grower, check out orchid supplier websites, or go to orchid shows, you'll see that today's hybrids in this group are moving closer and closer to meeting these breeding objectives.

Identifying a few popular ones

Because this group is so huge, I try to hit on some of the most popular in this group. This is only the tip of the iceberg:

- ***Beallara* Marfitch (now called *Aliceara* Marfitch) 'Howard's Dream':** This orchid (see Figure 13-14) has dazzling, large, deep burgundy flowers on upright flower spikes with white markings and a dash of yellow on the lip. These are always the plants people stop to admire at the orchid shows.
- ***Beallara* Tacoma Glacier (now called *Aliceara* Tacoma Glacier):** Although you can find this orchid in various forms, most have very large frilly flowers with red markings.
- ***Brassidium* Fly Away 'Miami' HCC/AOS:** These bright yellow flowers are borne in huge numbers and look like they are taking off in flight. (Refer to Figure 13-15.)
- ***Burrageara* Stefan Isler:** This orchid has upright stems with many brilliant red flowers with a lighter color lip. It's free flowering and will bloom more than once a year when the plant is mature. See a color photo of a related hybrid, *Burrageara* Living Fire, in the color insert.

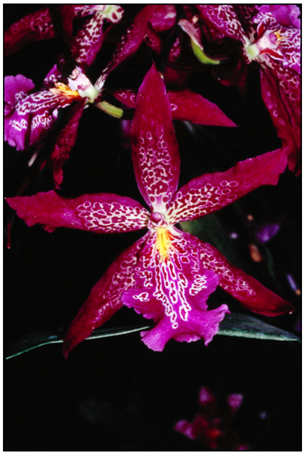

FIGURE 13-14: *Aliceara* Marfitch 'Howard's Dream' is always the center of attention when it's in bloom.

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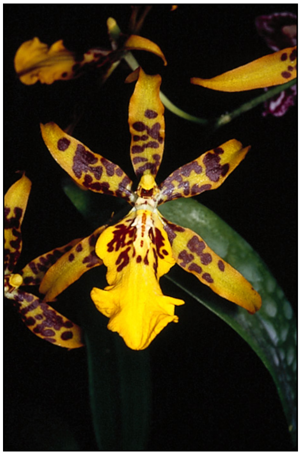

FIGURE 13-15: The flowers of *Brassidium* Fly Away 'Miami' HCC/AOS have masses of flowers on long flower spikes.

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- ***Colmanara* (now called *Oncostele*) Wildcat:** You can find many different selections of this orchid (see Figure 13-16), and they're all very bright yellow, waxy flowers about 3 inches (7.5 cm) across with very distinct yellow or maroon markings, and a lip that is usually very dark red and marked with yellow. It's quite a standout.
- ***Degarnoara* (now called *Aliceara*) Winter Wonderland 'White Fantasy':** Many selections of this orchid (see Figure 13-17) are available, but they look very similar. They have large white flowers and lip with sepals that extend slightly backward. The lip and petal are lightly spotted in red. The flower is said to have the fragrance of bananas. An established plant will bloom a few

times a year. The *Degarnoara* Winter Wonderland 'White Fantasy' has a unique blend of lip shape similar to miltonia, longer petals like brassia, and wider flowers like odontoglossum.

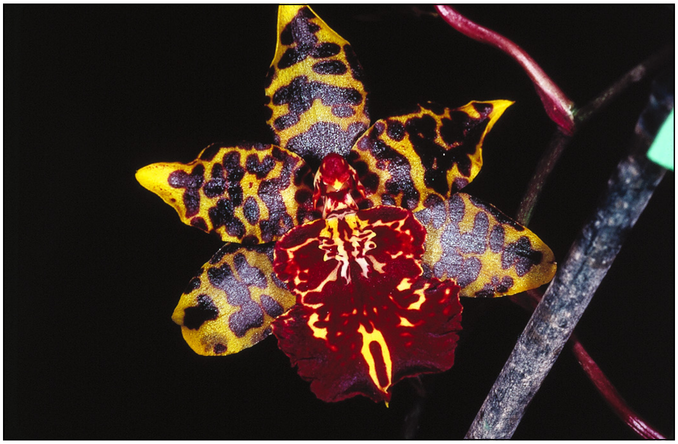

FIGURE 13-16: *Oncostele* Wildcat has dramatic feline markings on a waxy long-lasting flower.

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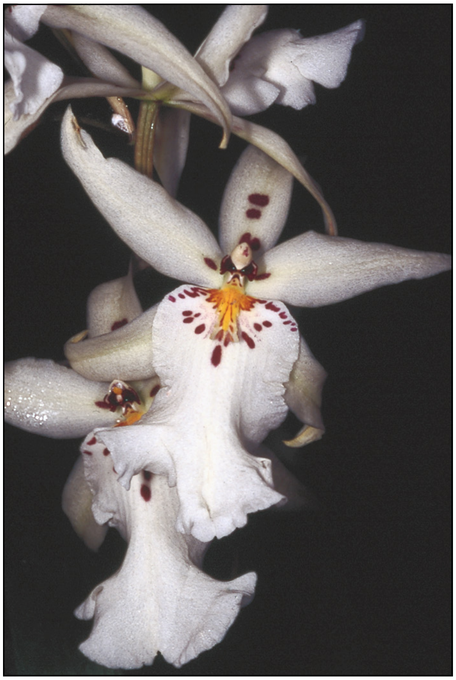

FIGURE 13-17: *Aliceara* Winter Wonderland 'White Fantasy.'

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- ***Milpasia Milt's Choice* 'Helen of Troy':** Long-lasting yellow with rose to maroon stripes on the petals with a large white lip are the features of this orchid. It grows about 10 to 12 inches (25 to 30 cm) tall and has a rosy fragrance.
- ***Miltassia* hybrids:** Most of this group are usually strongly marked and brightly colored.
- ***Miltonidium* (now called *Oncidopsis*) Bartley Schwartz:** Several different forms of this orchid (see Figure 13-18) are available, but most have upright spikes of many red to purple flowers with white lips marked in red.

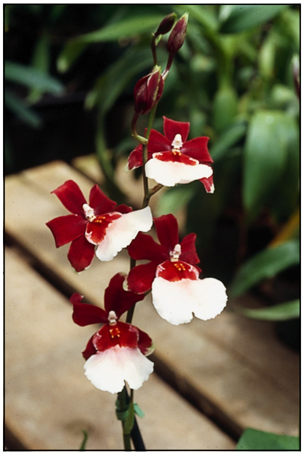

FIGURE 13-18: *Oncidopsis* Bartley Schwartz have many red to purple flowers on an upright flower spike.

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- ***Miltonidium* (now called *Oncidopsis)* Issaku Nagata 'Volcano Queen' HCC/AOS:** An easy orchid with many 1½-inch (4-cm) flowers on tall multibranched spikes. The petals and sepals are yellow overlaid with mahogany. The flared lip is white at the bottom and red and purple at the top. The foliage can grow 18 to 24 inches (45 to 60 cm) tall and the flowers have a light floral fragrance.
- ***Odontioda* (now called *Oncostele*) Margarete Holm 'Alpine':** A gorgeous full-bodied white flower with clear burgundy markings. See the color section of photographs for an example.
- ***Odontioda* (now called *Oncostele*) Vespa 'Charm':** This hybrid (see Figure 13-19) is a captivating, very compact orchid that only grows 6 to 8 inches (15 to 20 cm) tall. It displays 2½-inch (6.5-cm) white, citrus-scented flowers that are decorated with distinct purple and red markings on the petals and sepals with yellow on the throat. I love this one!

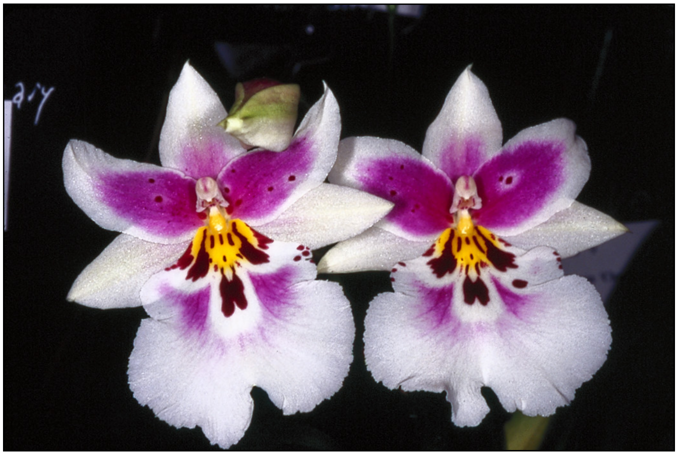

FIGURE 13-19: *Oncostele* Vespa 'Charm' is a favorite because of its compact habit and colorful markings.

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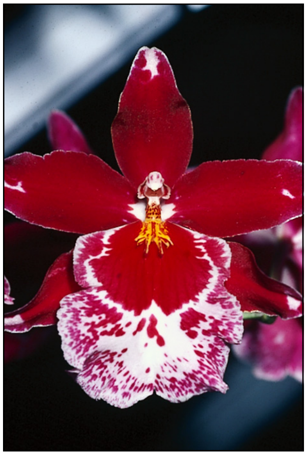
- ***Odontobrassia* (now called *Brassidium*) Fangtastic Bob Henley:** Seventy-five percent of this hybrid's lineage is from brassias, so it has characteristically spidery yellow flowers that are 4 to 5 inches (10 to 13 cm) across with maroon markings and yellow lips on arching flower spikes.
- ***Odontocidium* (now called *Oncidium*) Crowborough:** This hybrid is another one of the earlier crosses that is still available today and is used plenty as a parent for newer hybrids. It has 3-inch (7.5-cm), bright yellow, thick-textured flowers with distinct mahogany markings.
- ***Odontocidium* (now called *Oncidium*) Tiger Crow 'Golden Girls' HCC/AOS:** An offspring of famous parents, *Odontocidium* Tiger Hambuhren and *Odontocidium* Crowborough, it shows off 2½-inch (6.5-cm) golden-yellow flowers with maroon spots and a bright yellow lip. The plant grows about 18 inches (45 cm) tall and the flowers have a light floral scent. See the color insert for a photo.
- ***Vuylstekeara* (now called *Oncidopsis*) Cambria 'Plush' FCC/AOS:** This hybrid (check out Figure 13-20) is a classic variety and was one of the first of these intergenerics to hit the market in a big way. Its many flowers are a clear dark red, tipped in white with a red-and-white edge lip. This variety has stood the test of time.
- ***Vuylstekeara* (now called *Oncidopsis*) Yokara 'Perfection':** This is a dazzler! Its light burgundy flowers sparkle with bright white patterns throughout. A yellow highlight appears on the lip.

FIGURE 13-20: *Oncidopsis* Cambria 'Plush' FCC/AOS has proven itself to be a winner.



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- ***Wilsonara* (now called *Oncidium*) Tiger Brew:** A free flowering and branching plant that has flowers with sepals and petals that are light yellow and spotted with burgundy and a lip that is lemon yellow with reddish spots. The edges of the petals and sepals are touched in red and fringed.

IN THIS CHAPTER

- **Discovering one of the biggest of all groups of orchids: Dendrobiums**
- **Finding orchids that are as weird as they get: Bulbophyllums**
- **Contemplating some other orchids**

Chapter 14

Considering Some Significant Others

In the chapters in Part 3 I present you with some of the largest orchid groups that are most suitable for home orchid growing. But, as you can imagine, with tens of thousands of different orchids out there, some additional ones in other groups are also prime candidates. In this chapter, I give you a glimpse at some of them. Refer to the color insert to see how vibrant these orchids can be.

A Huge and Interesting Lot: Dendrobiums

Dendrobiums and their close relatives number more than a thousand. They call their homes the old-world tropics, which include New Guinea and the exotic land down under, Australia. Some of these orchids have exacting cultural requirements that are a challenge to provide. The ones I discuss here are the easier ones to grow.

They have basically the same cultural requirements as cattleyas (see Chapter 11) — medium to high light, modest humidity, and intermediate temperatures. Many of the dendrobiums naturally undergo a drier winter than summer, so they appreciate the same treatment from you. Some are *evergreen* (keeping their foliage year-round), whereas others are *deciduous* (dropping their leaves in the fall) as they enter a rest for the winter, then put out their new growth in the spring.

Naming the most popular dendrobiums

Here is a small selection of some of the easiest and most readily found dendrobiums that are not very demanding. As you become familiar with this huge group of plants, you'll surely find others you want to try.

Dendrobium phalaenopsis

I list this one first because it's by far the most popular and common dendrobium. Luckily, it's also one of the least expensive and easiest to grow. Hybrids of this type are found in an impressive array of color combinations and are usually about 1½ to 3 inches (3 to 7 cm) across and look much like phalaenopsis flowers (thus, the species name of phalaenopsis). Figure 14-1 shows an example of a *Dendrobium phalaenopsis.* The most common flower colors are white, shades of pink, and purple, but some of the newer offerings have contrasting sepals, petals, and lips in a whole range of pastels.

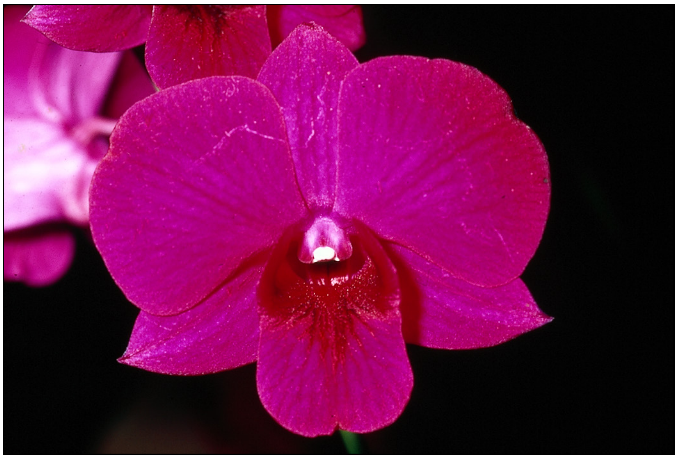

FIGURE 14-1: The *Dendrobium phalaenopsis* flower looks much like a phalaenopsis orchid (see Chapter 10).

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Dendrobium phalaenopsis, which are evergreens, differ dramatically in their growth habits — some are very compact, about 6 inches (15 cm) tall while others can reach 3 feet (1 meter) or more in height (see Figure 14-2).

REMEMBER

Like most dendrobiums, the *Dendrobium phalaenopsis* prefers to be pot-bound, so it's content to stay in a small container. It requires a modest drying-off period during the winter and early spring to promote flowering. You can resume regular watering when new growth appears in the spring until after flowering.

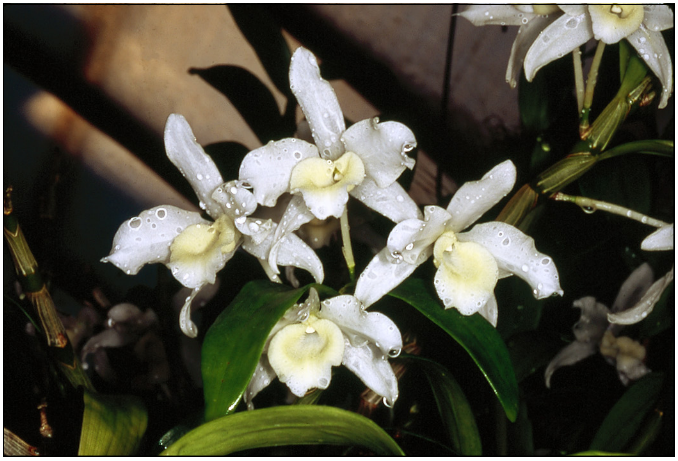

FIGURE 14-2: A white form of this popular dendrobium, *Dendrobium nobile.*

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Dendrobium phalaenopsis hybrids, sometimes referred to as "cane" Dendrobiums because of their upright stems, can vary tremendously in their growth habits from dwarfs to giants.

Dendrobium nobile

Another one of the most popular dendrobiums, the *Dendrobium nobile* (shown in Figure 14-2) has been hybridized extensively so that today's varieties come in a carnival of bright colors.

TIP

The *Dendrobium nobile* is deciduous, so when winter approaches, keep it on the dry side. Only water it enough to keep its pseudobulbs from shriveling. Let the evening temperatures get down around 50°F to55°F (10°C to 13°C).

Some people have described the fragrance of these orchids as being like honey or musk during the day and mown hay at night.

To see other examples of the nobile type dendrobiums, check out *Dendrobium* Comet King and *Dendrobium* Nalene Bui in the color insert.

Dendrobium kingianum

This dendrobium is wonderfully tough — it can withstand temperatures down to 35°F (1.6°C) — and easy to grow, and it's just starting to get its due. This Australian native was once considered a weed among some orchid growers, because it's such a rapid grower. It's continuing to get new respect as more people are becoming aware of how easy and forgiving it is to grow and bloom and as many new flower color forms are appearing.

The usual flower is small, up to about 1 to 1½ inches (2.5 to 4 cm), in shades of pink, borne in 8-inch (20-cm) sprays of about a dozen flowers (see Figure 14-3). The newer selections include dark purple, purple-blue, white, striped, and a whole range of combinations of these. This orchid varies considerably in its growth habit from a few inches (5 cm) to almost 16 inches (50 cm) tall.

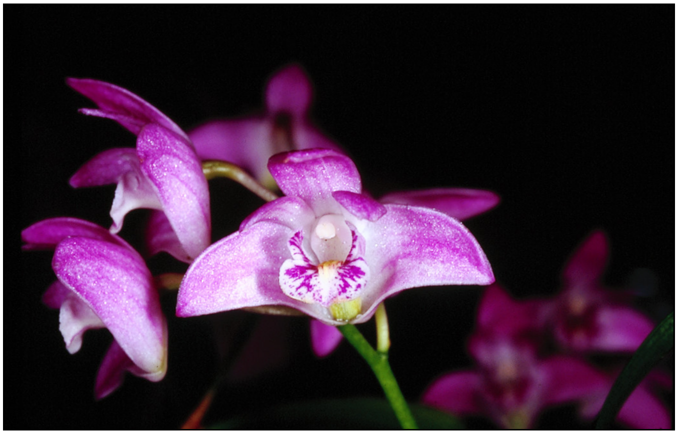

FIGURE 14-3: *Dendrobium kingianum* has small crystalline flowers that are found in various shades of purple and pink.

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This orchid has a range of fragrances from hyacinth to lilac to honey.

TIP

Dendrobium kingianum requires a dry, cool winter to bloom dependably. It's an evergreen orchid that has attractive compact, thick, dark green foliage. It readily forms *keikis* (baby plants); refer to Chapter 8 to see how to handle them. For an image of *Dendrobium kingianum*, check out the color insert.

Considering some other Dendrobiums

Here are some other Dendrobiums to try:

- ***Dendrobium aggregatum (now called Dendrobium lindleyi):*** This orchid and its cousin, *Dendrobium jenkensii,* are dwarf plants that produce showers of 1-inch (2.5-cm) golden yellow, honey-scented flowers with broad, almost heart-shaped lips. The flowers appear in groups of two or three for *Dendrobium jenkensii* (see Figure 14-4), more for *Dendrobium aggregatum,* in the spring. The pseudobulbs are small, 1 to 2 inches (2.5 to 5 cm). These plants are frequently grown on slabs and are best not transplanted or divided often. They make their most spectacular display when they become large-sized plants. For an image of *Dendrobium lindleyi* check out the color insert.

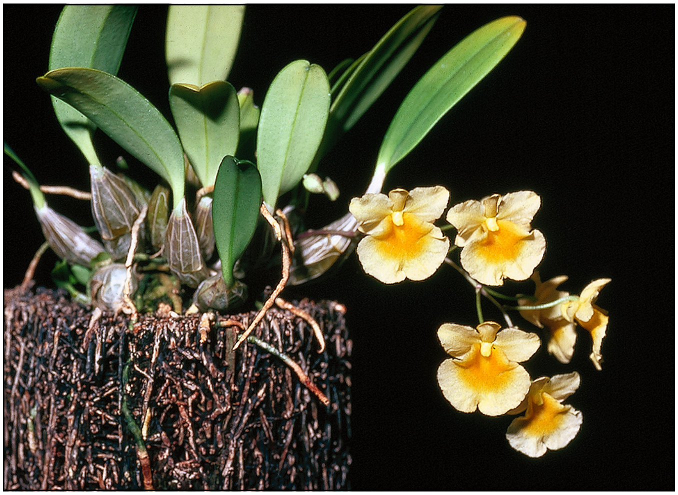

FIGURE 14-4: *Dendrobium jenkinsii* is a miniature grower that blooms best if it's transplanted very infrequently.

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- ***Dendrobium bellatulum:*** This is another miniature plant only reaching about 4 inches (10 cm) tall with one to three 1½-inch (4-cm) white flowers with orange and red markings in the lip. The flowers have a fresh lemon fragrance. See the color insert for a photo.
- ***Dendrobium chrysotoxum:*** This orchid has butter-yellow, pineapple- or mango-scented, 1-inch (2.5-cm) flowers with fringed lips and a darker orange throat that are displayed on a 12-inch (30-cm) flower spike (see Figure 14-5). The plant is evergreen and a compact grower.

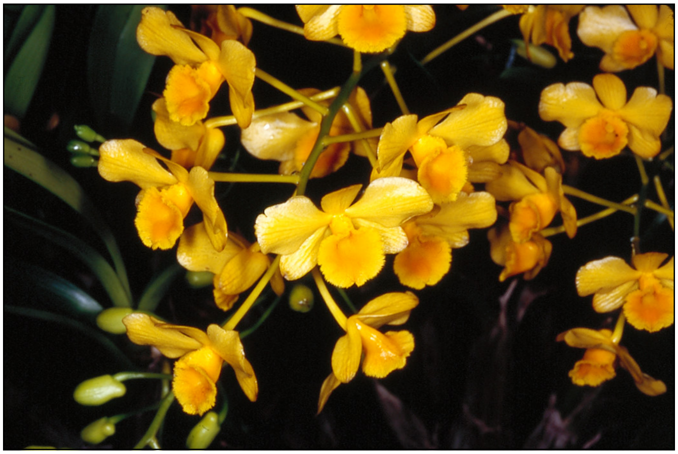

FIGURE 14-5: *Dendrobium chrysotoxum* produces sprays of golden flowers with the scent of tropical fruit.

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- ***Dendrobium loddigesii:*** This is a compact grower that reaches about 6 inches (15 cm) tall. It's covered in the spring with 2-inch (5-cm) light-pink flowers with light-yellow lips that last about three weeks. It has a rambling habit, so it's most suited for mounting on a slab (see Chapter 7 for more information).
- ***Dendrobium scabrilingue:*** This miniature, growing only 3 to 5 inches (8 to 15 cm) high, has been in bloom for me for months! Its starry white 1-inch (2.5-cm) flowers have a touch of light yellow in the center with a pleasant, sweet fragrance that reminds me of the white paste I used to use in elementary school for art projects.
- ***Dendrobium lawesii:*** This orchid is a standout from the jungles of New Guinea with 1-inch (2.5-cm) bright red-orange, waxy flowers, tipped in yellow that are borne on leafless stems. It's found in several color forms and its floral brilliance and sweet scent make it in high demand. It needs a drier rest period during the winter.

  For some images of some other amazing dendrobium species, such as *Dendrobium parishii* and *Dendrobium unicum,* see the color insert.

Listing some popular hybrids

Thousands of dendrobium hybrids exist, but many of them are best suited for a very cool greenhouse. In the following list, I focus on a few that are particularly easy and are a reasonable size to handle:

- ***Dendrobium* Andreé Millar:** Often misspelled as André Miller, its exotic green 1½-inch (4-cm) flowers, with lips prominently veined in dark maroon, make this orchid a standout (see Figure 14-6). It apparently comes in two forms: one very compact, about 6 to 8 inches (15 to 20 cm) tall, and the other about twice or more this height. So, if plant size is important to you, be sure to ask which form you're buying.
- ***Dendrobium* Iki:** A great miniature that rarely grows higher than 7 inches (20 cm), this orchid has attractive dark green, glossy, evergreen foliage and charming 1-inch (2.5-cm) creamy white flowers with red and orange in the lip. It has the sweet fragrance of licorice. See the color insert for a photo.
- ***Dendrobium* Jesmond Gem:** This dendrobium is merely representative of the many new hybrids that are coming into the United States from Australia. They're usually tough plants that can survive temperatures approaching freezing and, in fact, will usually bloom best if given a very cold period about 40°F to 49°F (4°C to 8°C). If you have a very cool bright spot, be on the lookout for these fine hybrids. Jesmond Gem has pristine white, 2-inch (5-cm) sweet-smelling flowers with purple specks on the lips and yellow stripes down the center of the lips. It grows about 18 inches (45 cm) tall.

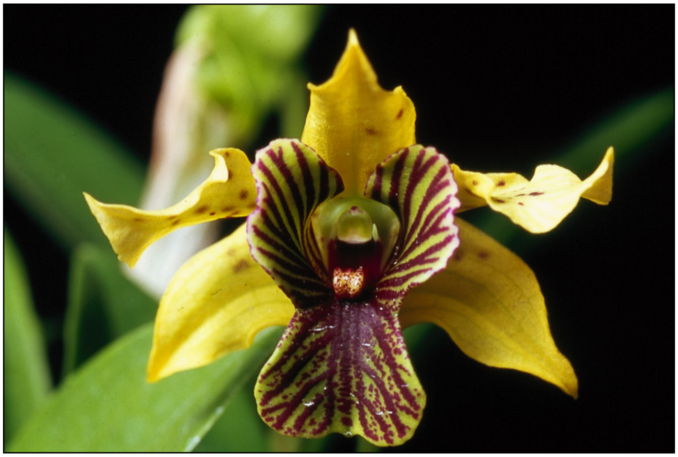

FIGURE 14-6: *Dendrobium* Andreé Millar has flowers that have an almost alien look.

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Weird and Wonderful Relatives: Bulbophyllum

One of the many great aspects of the orchid world is that, with their seemingly countless species and hybrids, you can find any orchid to meet your fancy! If you're interested in the bizarre, otherworldly, and sometimes malodorous, bulbophyllums fill the bill perfectly. You have to see (or smell) these oddities to believe that they could exist. Many are *carrion flowers*, ones that smell like rotting meat; this is to attract their primary pollinators, various types of flies. Here are a few of the outstanding ones that aren't particularly difficult to grow:

- ***Bulbophyllum beccarii:*** Contrary to the other orchids in this book, this one is *very* difficult to grow, but I simply had to let you know about it because it's the "grande stinko" of the orchid world. This orchid is described as smelling like "100 dead elephants rotting in the sun." You don't want to have it in your living room! It's considered to be one of the most spectacular bulbophyllums if you can stand the stench. Its leaves grow up to 2 feet (60 cm), so it's usually grown mounted, and it has small brown flowers with a purple blush.
- ***Bulbophyllum echinolabium:*** Displaying a dramatic flower that can be 1 foot (30 cm) or longer, this bulbophyllum has a dark-cream flower with mahogany stripes. It's a compact grower of about 6 to 8 inches (10 to 15 cm) tall (see Figure 14-7).
- ***Bulbophyllum odoratissimum:*** A miniature bulbophyllum that grows to about 3 inches (8 cm), this orchid has petite flowers of a dozen or more. The flowers are yellow with a reddish-brown lip and actually smell pleasant.

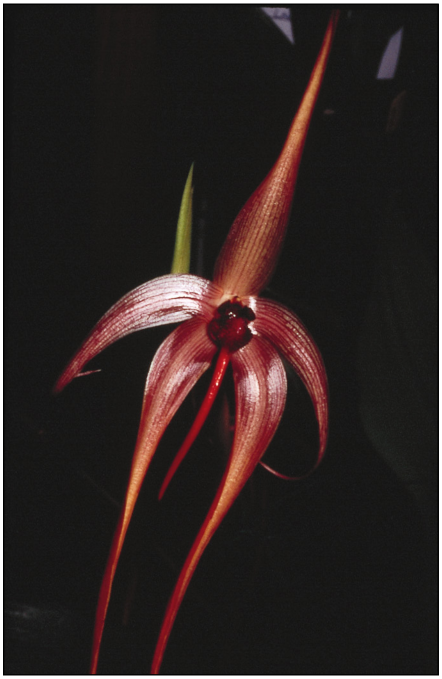

FIGURE 14-7: *Bulbophyllum echinolabium* has a flower that makes this orchid one of the largest in the genus.

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- ***Bulbophyllum lobbii:*** A jasmine-scented species, this orchid is referred to as the Queen of Bulbophyllums. The 3- to 4-inch (7.5- to 10-cm) yellow flowers with purple mottling are borne singly. The leaves are spatula-shaped and about 12 inches (30 cm) long.
- ***Bulbophyllum phalaenopsis:*** This is another stinker. It has huge leaves up to 4 to 6 feet (120 to 180 cm) long, shaped like those of phalaenopsis (thus, the species name). Its flowers are dark red with yellow protuberances. This huge plant is really only happy in a greenhouse.

  TECHNICAL STUFF

  At the highly prestigious 2004 New York International Orchid Show, a gigantic, mounted specimen of *Bulbophyllum phalaenopsis* shared the top honor with one other orchid to be Co-Grand Champion and received a Certificate of Cultural Excellence from The American Orchid Society. This plant was said to be valued at thousands of dollars!
- ***Bulbophyllum rothschildianum:*** One of the most spectacular of the bulbophyllums, this orchid has five or six flowers in a cluster. Each flower is about 1 inch (2.5 cm) wide and 7 inches (17.5 cm) long. The flowers have yellow bases covered with dark red and darker maroon lips. The plants grow about 12 inches (30 cm) high (refer to Figure 14-8).

  To give you sampling of the variety of flowers found in this group check out the image of *Bulbophyllum annandalei* in the color insert.

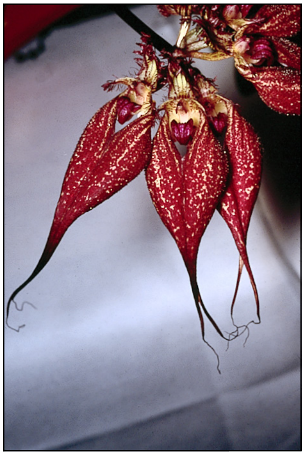

FIGURE 14-8: *Bulbophyllum rothschildianum* has one of the most magnificent flowers of all bulbophyllums.

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Orchid Miscellanea: All the Rest

Having to give the rest of these fascinating orchids such little coverage is a shame, but with so many orchids and so little space. . . . In the following sections, I give very brief introductions to some example plants in other genera that deserve your attention.

Angraecoids

Africa and its neighboring islands have always harbored mystery and intrigue with their fantastic fauna and flora. The orchids of this part of the world hold this same allure. Many of these orchids have waxy-white, star-shaped, heavenly scented flowers on plants with dark-green leathery leaves. Some are humongous and would only fit in a greenhouse with plenty of room, whereas others are of a manageable size or even miniature. In general, they require more light than phalaenopsis but have the same preference for warm, humid growing areas.

TIP

All angraecoids can be a bit touchy about repotting, so grow them in a fresh, long-lasting mix or mount them, so you don't have to repot them often.

A few of the big fellows

If you have plenty of space, these few spectacular orchids are worth your consideration:

- ***Angraecum sequipedale:*** Commonly called the Star of Bethlehem or the King of Angraecums, this Madagascan native is a spectacular orchid with 4½-inch

(11-cm) waxy white blossoms blessed with the heady fragrance of jasmine (see Figure 14-9). Because this plant prefers very strong light and ultimately grows up to 3 feet (1 meter) tall and wide, it requires a large sunroom or a greenhouse.

- ***Angraecum* Longiscott:** Quite a showy angraecum hybrid, the plant grows 36 inches (90 cm) high and 12 inches (30 cm) wide. It produces 3-inch (7.5-cm) waxy, white lipped flowers with greenish sepals with 8- to 10-inch (20- to 25-cm) spurs that are borne on up to 24-inch (60-cm) arching spikes. It has a jasmine scent and is a reliable bloomer.

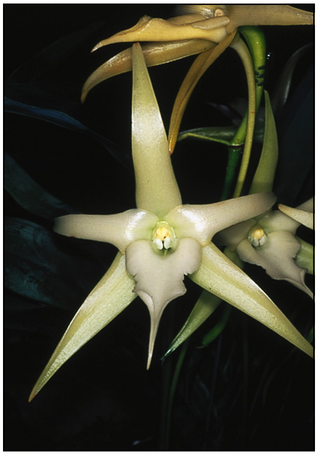

FIGURE 14-9: *Angraecum sequipedale* has a waxy, fragrant flower that can last for months.

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A MOTH WITH A 12-INCH TONGUE!

Angraecum sequipedale was made famous by Charles Darwin who postulated that there must be a night-flying moth with a 12-inch tongue to be able to harvest the nectar from the flower of this orchid and in the process pollinate it. Darwin's scientific colleagues thought this belief to be preposterous. Thirty-five years after his death, he was proven right when a hawk moth, the pollinator for this orchid, with a 12-inch (30-cm) tongue, was found!

These might be more your size

Not everyone has the growing room necessary to accommodate the burly plants in the previous section, so these smaller cousins may be a better choice for you. They have the same waxy, white, long-lasting flowers with delightful fragrances, but on much smaller plants:

- ***Angraecum compactum:*** As the second Latin name suggests, this is a more manageable sized plant that is about 10 inches (25 cm) wide and 12 to 14 inches (30 to 35 cm) high. It's a slow grower, but easy to grow, and it dependably produces 3-inch (7.5 cm), waxy-white, citrus-scented flowers after it's established.
- ***Angraecum leonis:*** This species is very popular because of its handsome green compact habit, about 6 to 10 inches (15 to 25 cm) high and wide with a relatively large 1½-inch (4-cm) waxy white flower (see Figure 14-10).

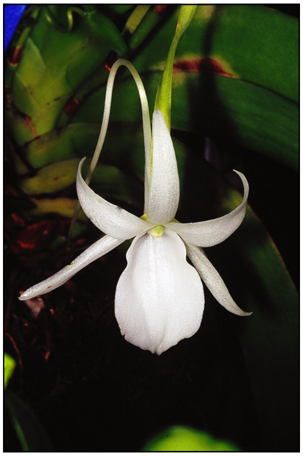

FIGURE 14-10: *Angraecum leonis* is a smaller grower that will fit anyone's growing space.

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Some smaller Angraecum relatives

Here are some charmers that are nice additions to your collection, all very fragrant:

- ***Aerangis citrata:*** This is an easy choice, an adaptable plant that thrives in lower light conditions and is a very compact grower. It blooms several times a year and has a light lemon fragrance (see Figure 14-11).

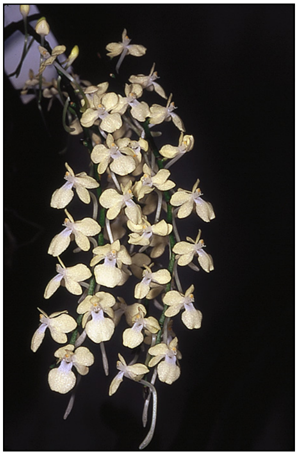

FIGURE 14-11: *Aerangis citrata* displays up to 30 flowers in arching sprays.

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- ***Aerangis fastuosa:*** Another gem with compact glossy green foliage with up to six flowers, with the fragrance of tuberose, in bloom at once.
- ***Angranthes* Grandalena:** This is one of my favorites because as this plant matures, it produces multiple growths with recurring, almost constant blooming. It produces 3-inch (7.5-cm), green-white spurred, jasmine-scented flowers borne singly that show off against its very compact, glossy, dark-green leaves.

Catasetums

Looking closely at the shape of its showy flowers, you can see how the catasetum got tagged with its common name: Monkey Goblet. Many hybrids of this orchid are available, and they're relatively easy to grow.

TIP

Catasetums are deciduous orchids, which means they like to be watered and fertilized copiously when they're in active growth, and then kept on the dry side during the winter — stop watering for four to six weeks — until they start new growth in the spring.

Catasetum Orchidglade was the first commercial catasetum hybrid. This selection has up to 15 2-inch (5-cm) creamy white, thick, waxy flowers that are covered with red freckles. It has a spicy fragrance and, like other catasetums, is usually grown in a basket. It prefers rapid drainage; the flowers are borne on pendulous sprays at the bottom of the plant (see Figure 14-12).

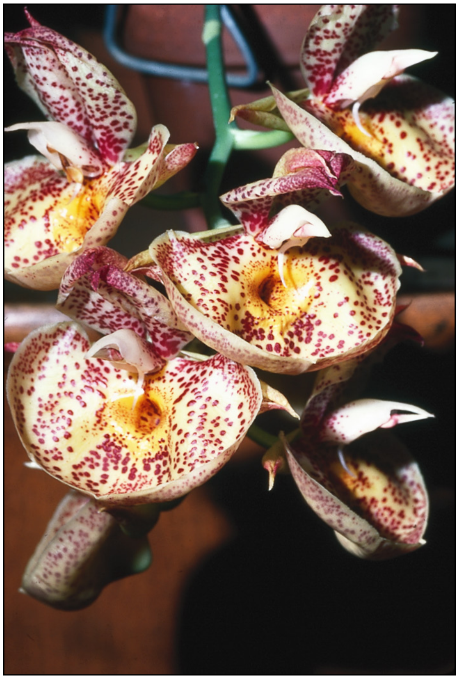

FIGURE 14-12: *Catasetum* Orchidglade has pendulous flowers and pleated foliage typical of catasetums.

Cochleanthes

This is a beguiling genus of orchids that is starting to get more exposure. Cochleanthes have very attractive glossy green foliage, usually bloom more than once a year, are easy to grow (preferring the same growing conditions as phalaenopsis) and have exotic flowers. I suggest the following three:

- ***Cochleanthes amazonica:*** It has white, 2-inch (5-cm), rose- or candy-scented flowers with vivid dark purple veins on the impressive, flared lip. A hybrid of this species, called Amazing, has very similar, but somewhat larger flowers. The plant grows about 8 inches tall.

  TIP

  Be sure to keep the potting material damp or the leaves will become pleated.
- ***Cochleanthes discolor:*** This is another fine species that has 2-inch (5-cm) cream-colored flowers with a mauve cupped lip. It grows about 8 inches (20 cm) tall and has a cedar or candy fragrance.
- ***Cochleanthes* Moliere:** It's a hybrid of *Cochleanthes amazonica* and *Cochleanthes discolor.* It is a marriage with a spectacular result: 2-inch (5-cm) flowers with white petals tipped with pink, and a huge, contrasting, dramatic purple lip.

Coelogynes

A genus of about 100 species found in Asia, coelogyne orchids are usually fragrant. Most of them do best in medium to high light in intermediate temperatures; some from mountainous areas like it cooler. Most of them grow and look best when they're permitted to grow to a large size, not divided.

Coelogyne cristata is one of the popular species of this group. It displays white, banana-scented flowers that are about 3 inches (8 cm) wide with a white lip with yellow markings.

REMEMBER

Because of its rambling habit, *Coelogyne cristata* is best grown into a large plant in a basket or mounted (see Figure 14-13). *Coelogyne intermedia* has white fruity-scented flowers with a yellow throat and grows to about 8 inches (20 cm) tall. *Coelogyne intermedia* should be kept on the damp side, or the foliage will become pleated.

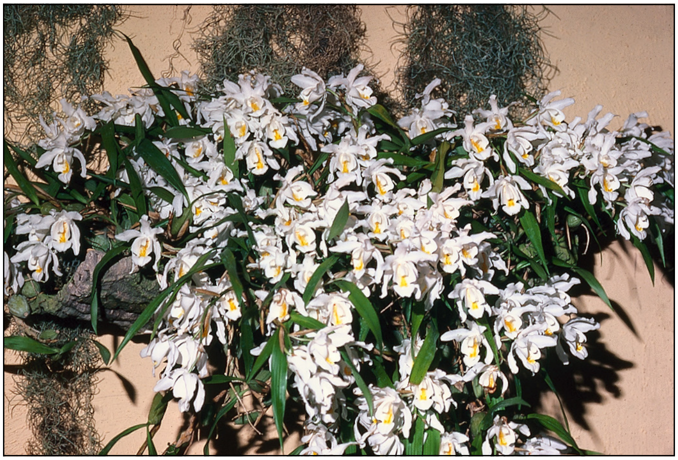

FIGURE 14-13: *Coelogyne cristata* makes a beautiful sight as a large, well-grown plant.

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To see another standout species from this genus, check out *Coelogyne lawrenceana* in the color insert.

Cymbidiums

Cymbidiums are popular as corsage orchids because they last for such a long time, even after they've been cut from the plant. Thanks to modern orchid breeding, these orchids are now available in a vast array of colors — some with markings on the lips, others with totally clear flowers and lips. The ones that most people are familiar with are the standard cymbidiums.

A full-size plant in complete flower is a jaw dropper. However, these plants can get 2 to 4 feet (60 to 120 cm) or taller and wider — they're serious space hogs. Also, some of the standard varieties require very cool and bright conditions for them to perform at their best.

TIP

The most common complaint of amateur cymbidium growers is that the plants grow fine, but they don't flower. If this sounds familiar, you're probably giving your cymbidium too little light or not giving it the cool evening temperature of 45°F to 50°F (7°C to 10°C) that it needs to trigger the formation of flower buds.

Newer, more-compact plants with a warmer temperature tolerance are appearing all the time, so life for the hobbyist cymbidium lover is getting easier. These smaller plants are referred to as miniature, but be aware that this is a relative term. Miniature cymbidiums still reach about 2 feet (60 cm) tall but can be managed in a 6- to 8-inch (15- to 20-cm) pot.

Standard cymbidium hybrids are very popular as outside orchids in mild areas like Southern California. They're grown successfully in many places if they have enough light, cool evenings, and space. Some such as *Cymbidium* Solana Rose (shown in Figure 14-14), have very full, round flowers. Newer ones are showing up in the marketplace with even larger and rounder flowers and in all shades and markings.

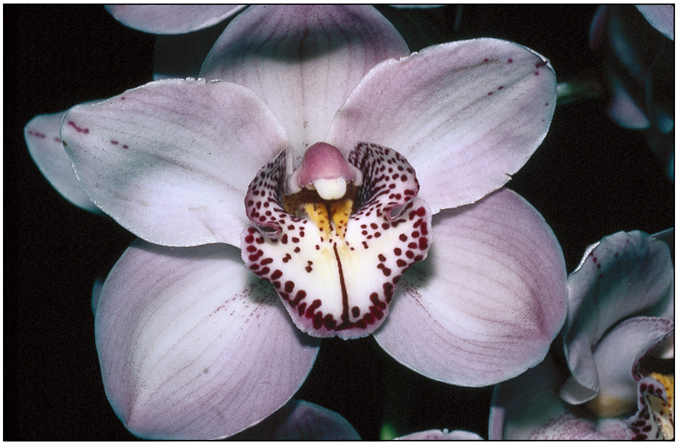

FIGURE 14-14: *Cymbidium* Solana Rose is a soft pink standard variety that exemplifies hybrid cymbidiums with large round flowers in pastel shades.

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Cymbidium Golden Elf is a 2½-inch (6-cm) clear bright-yellow-flowered a veteran miniature variety with four to six flowers per spike. Its size is more manageable for most home growers. This one can bloom several times a year and is more tolerant of warmth. The lightly rose-scented flowers last for about two weeks.

Lycastes

A deciduous plant, lycaste orchids have pleated foliage and triangular flowers. Many of them have a tantalizing fragrance. They like good air circulation, cool evenings of 45°F to 55°F (7°C to 13°C), and frequent and heavy waterings during the summer growing season. They should be kept on the dry side during the winter. Here are a couple:

- ***Lycaste* Aquila 'Détente' FCC/AOS:** Now called *Lycamerlycaste* Aquila 'Détente' FCC/AOS, this one is a prize-winner with a 4-inch (10-cm) peachy colored flower that has a sweet floral fragrance. Flip to the color insert for a photo.
- ***Lycaste aromatica:*** This plant has sunny lemon yellow, cinnamon-scented, 2½-inch (6-cm) flowers borne in groups of up to 30 or 40 on a compact plant — all of which makes this easy-to-grow species very popular.

TIP

If *Lycaste aromatia* is grown in bright light, the flowers have a more intense color.

To see images of another lycaste, *Lycaste* Koolena, refer to the color insert.

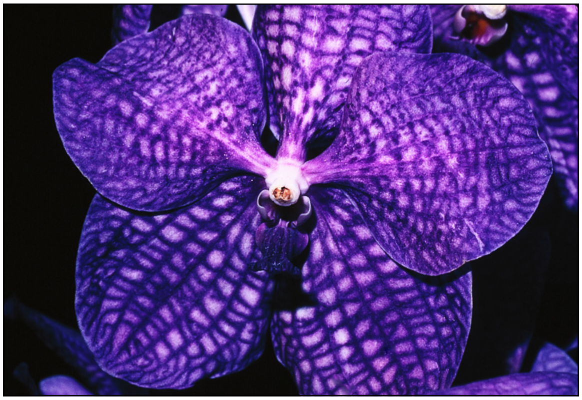
Vandas and some of their close cousins

If you've ever been to Hawaii, then you're familiar with the orchids that are used in the welcoming leis; most often, they're vandas. The varieties used for these flowery necklaces are ones most suitable for growing in Hawaii and other very bright areas. Fortunately, others in this group are less demanding but still can be quite challenging for many home growers because of their higher light requirements. If you live in warmer, higher light areas of the country, like Hawaii, Florida, parts of California, and tropical areas around the world, these plants are more doable.

Large strap-leaved vandas are simply gorgeous and are found in a wide range of colors including heavenly blues (see Figure 14-15), cotton-candy pinks, sunny yellows, and hot oranges. The flowers can be quite huge, 5 to 6 inches (12.5 to 15 cm) across on some hybrids.

Although they don't require as bright light as some of the other vandas, they still present quite a challenge to home growers in the northern part of the United States who experience heavy cloud cover and short, dark days in the winter. To grow them in these areas, you need to have an exceptionally sunny southern window or a hobby greenhouse. I've grown and bloomed some of them under high-intensity lights, but you don't want to know what my electric bill was!

FIGURE 14-15: This strap-leaved variety, *Vanda* Kasem's Delight, shows the typical large round flowers of today's superb quality varieties.



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For photos of additional vandas, check out *Vanda* Suk Samran Beauty and *Vanda* Sagarik 'Rapee' in the color insert.

The small-growing vandas

Other vanda hybrids are naturally smaller in stature. Their flowers may not be quite as giant as the 6-inch (15 cm) flowered strap-leaved vandas, but they can still be showstoppers and their smaller stature makes them much easier to manage. Grow them in a sunny window or close to fluorescent lights. Search out those that have the smaller sized growth habit.

These smaller-growing vandas come in a wide range of colors with many different varieties. Here are a few of the older classics that are the parents of some of the newer varieties:

- ***Vanda* Medasand:** Still used in breeding to produce superior plants. Plants like *Vanda* Medasand are frequently grown in teak baskets like the one shown in Figure 14-16 because they afford the excellent drainage that vandas love. The orchid can also be grown in pots if the containers have plenty of holes in the bottom.
- ***Vanda* Peggy Foo:** Another fine performer with clear, glossy red flowers on a compact plant (see the color insert for a full-color photo).
- ***Vanda* Yip Sum Wah:** This is one of the most famous of small vandas. It's most found as a parent of bright oranges or reds, sometimes in purples, but it's also available in shades of yellow. It's noted for its prolific blooming and relatively compact habit.

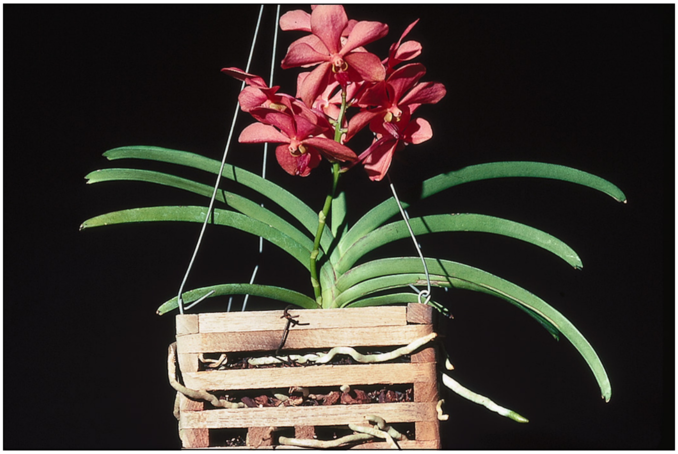

FIGURE 14-16: *Vanda* Medasand in a teak basket.

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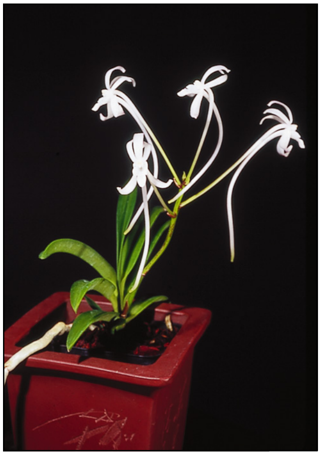
Other types of vanda-like orchids that are related

Here is an assortment of different vanda-type orchids that I recommend (nearly all of them are quite fragrant):

- ***Aerides odorata:*** Bears clove-scented white flowers with purple spots on a pendulous flower spike. Leaves are about 10 inches (25 cm) long, but the stem grows quite tall, so this plant would be suitable in a bright window, but not under lights.
- ***Ascofinetia* Cherry Blossom:** Now called *Vanda* Cherry Blossom, this compact beauty with lightly fragrant rose-lavender flowers is the result of breeding a small growing vanda, *Vanda ampullacea,* with the Japanese friend, *Vanda falcata.*
- ***Neofinetia falcata***: Now called *Vanda falcata,* this dwarf plant, 3 to 6 inches (7.5 to 10 cm) high with waxy white flowers about 1 inch (2.5cm) wide, is easy to bloom on a bright windowsill or under lights. It's frequently used as a parent to impart its compact growth habit and vanilla fragrance to its offspring (see Figure 14-17). Commonly called the Japanese Wind Orchid, this was once the exclusive property of the Royal Family of Japan. Commoners were forbidden to have it in their possession. Its cultivation dates many centuries back to the Edo period in Japan. It was first described in 1784.
- ***Neostylis* Lou Sneary:** Now called *Vandachostylis* Lou Sneary, this has been a very successful variety that has a compact habit (inherited from one of its parents, *Vanda falcata*). It comes in various color forms — white, pink, and blue. All produce a flurry of 1-inch (2.5-cm) fragrant flowers and make super plants for growing on the windowsill or under lights.

FIGURE 14-17: *Vanda falcata* — commonly called the Japanese Wind Orchid.



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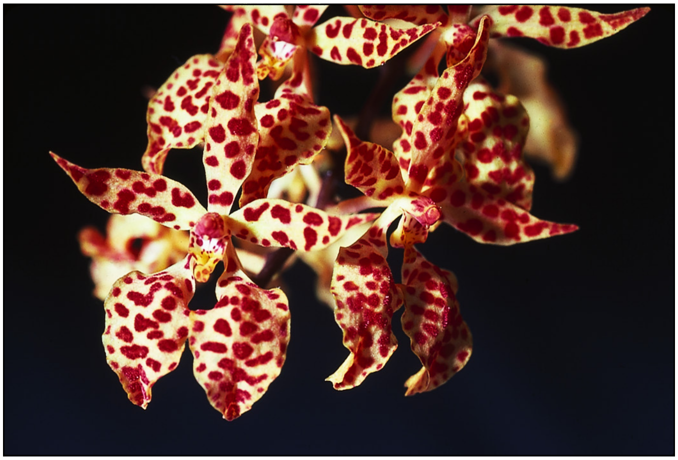
A close relative of this hybrid is *Vandachostylis* Charm 'Blue Star.' To see this blue beauty in full color, check out the color insert.

- ***Renanthera monachica:*** Many of the renantheras are huge plants that can get several feet tall and so are a bit of a challenge to handle in the house. This is a dazzling dwarf form that takes years to get up to 1 foot (30 cm). Its flowers are the colors of a bright yellow-orange flame (see Figure 14-18).

FIGURE 14-18: *Renanthera monachica* is a delightful, small, and brightly colored orchid.



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- ***Rhynchostylis gigantea:*** When you smell the intoxicating citrus fragrance of this orchid, commonly called foxtail orchid because of the shape of its pendulous cluster of flowers, you'll be hooked. This can eventually become a quite large orchid, but it will take many years to get there. It fills up an entire room with its citrus fragrance, and its pendulous flower spike in full bloom is a splendid sight. This one performs great in a sunny window. It appears in several color forms including the most common white with purple spots, all white, and solid burgundy red, at times referred to as the Sagarik Strain (see Figure 14-19).

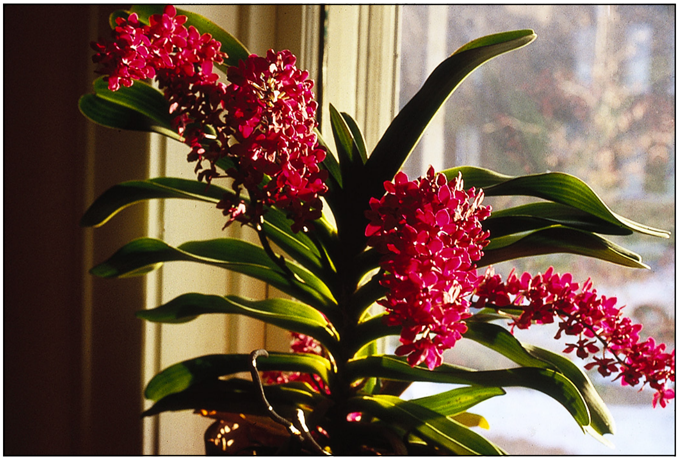

FIGURE 14-19: The foxtail orchid, *Rhynchostylis gigantea.*

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- ***Rhynchostylis retusa:*** This looks very similar to the preceding plant and its fragrance and flower color range is similar. The flowers tend to be smaller but there are usually more of them on longer flower spikes.
- ***Rhynchostylis coelestis:*** Unlike the other two rhynchostylis, this one has upright flower spikes, and the most common form has blue and white flowers. Other color forms are pink and white.

Zygopetalums

Oh, what a heavenly fragrance these have! When only one flowering zygopetalum plant is in a room, it smells like a bed of hyacinths. Most of the zygopetalums have similar color markings — usually, green petals barred in dark maroon or brown with a very broad and prominent white lip with dark purple or pink (see Figure 14-20). You can find easier orchids to grow, but I suggest giving these a try on an eastern or southern windowsill.

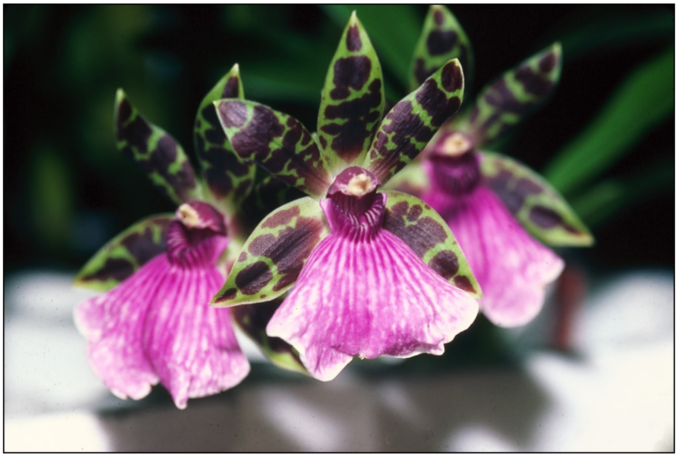

FIGURE 14-20: A zygopetalum hybrid with typical markings.

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IN THIS CHAPTER

- **Focusing on some of the easier exotic terrestrial orchids**
- **Looking at hardy lady slippers**
- **Considering other hardy orchids**

Chapter 15

Hardy Orchids That Laugh at the Cold

When most folks think about orchids, they conjure an image of them dripping off the trees in a tropical rainforest. Indeed, most orchids are from warmer climates, but certain orchids thrive and require a colder climate because they're native to more frigid climates. In fact, more than 200 species of native orchids grow in North America and many others are found in other cold-weather countries. Almost all of these are *terrestrial* orchids (ones that grow in the ground).

Although most of this book focuses on tropical or semitropical orchids grown in a protected warm, frostfree area, this chapter presents a group that you can plant in your outdoor garden with other hardy perennials. I discuss those orchids that are the easier ones to grow. After you gain more confidence and experience, you can explore a wide variety of hardier orchids. I encourage you to go online as well and check out the various books that deal exclusively with these orchids.

Focusing on Exotic and Easy Terrestrial Orchids

Here I introduce you to some of the many hardy orchids that you can try in your garden outdoors in temperate areas. I focus on ones that are reasonably available and are showy.

These sections address those orchids that you'll likely have the most success with — Chinese ground orchids (*Bletilla*), Calanathe orchids (*Calanthe*), and *Spiranthes*. Of these three, Chinese ground orchids are the most often found in various bulb catalogs, especially the most common species, *Bletilla striata*, and should probably be your first choice if you want to start out easy.

Chinese ground orchids

You can find a variety of Chinese ground orchids and cultivated varieties, some of which have variegated foliage of this charming orchid, but *Bletilla striata* is the one most often offered in bulb catalogs. All three of the species that I discuss in this section (*striata, formosana,* and *ochracea*) are relatively drought tolerant and will form large clumps. If you want to try a larger selection of these orchids, check out the specialty growers by just searching for "bletilla" in your browser.

Various forms of this Asian beauty sport a flurry of dark pink, red-purple or white 1½- to 2-inch (4 to 5 cm) mildly fragrant nodding flowers in mid-summer that somewhat resemble miniature cattleya blooms (see the color insert). *Bletilla striata* is one the least demanding bletillas and appears to be relatively pestfree. All this orchid asks for is well-drained soil in a semi-sunny area for the northern part of its range and a shadier area in the warmer zones.

TIP

Because they're a somewhat smaller grower, peeking out at about 18 inches (45 cm), don't hide them in the back of your flowerbed. They're also terrific as pot plants. They grow well in Zones 5 to 10. Like other hardy perennials in your garden, these orchids go dormant in the winter when their foliage dies back. At this time, they appreciate a winter mulch of a few inches (cm) of an organic material, even in zones warmer than Zone 5, to prevent early emergence of the foliage that can be susceptible to damage from a late freeze.

A couple other species you may try include the following:

- ***Bletilla formosana:*** Called the Taiwan Ground Orchid, this orchid displays soft pink flowers, but it's not quite as hardy as Bletilla striata.
- ***Bletilla ochracea:*** With yellow flowers, this orchid (see the color insert for a photo) grows in similar garden situations as *Bletilla striata* but isn't quite as vigorous.

WHERE CAN YOU GROW HARDY PLANTS — CHECK WITH THE USDA PLANT HARDINESS ZONE MAP

Most books dealing with orchids don't discuss plant hardiness because most orchids are from the tropics or semitropics. However, some orchids like the ones I discuss in this chapter are hardy. When growing these types of hardy terrestrial orchids as perennials outdoors, you need to know about the minimum winter temperatures these orchids are most likely to survive in your climate. To check what your plant hardiness zone is, study the USDA Plant Hardiness Zone Map online at `https://planthardiness.ars.usda.gov/`. For example, Columbus, Ohio, is Zone 6a.

Most countries outside the United States also supply similar hardiness maps and guidelines. For Canada, check out `http://planthardiness.gc.ca/?m=1&lang=en`.

Even though you can find quite a few hybrid bletillas, one that seems to be most readily available is Bletilla 'Brigantes,' which is a cross between *Bletilla striata* and *Bletilla ochracea*. This hybrid can be variable in its flower color with shades of yellows and purples. Like most hybrid plants, this variety is usually more vigorous than either of its parents.

Calanthes

This genus of orchids having more than 200 species, sometimes called Christmas orchids, is found in various parts of Asia but is most common in Japan. Their small but showy flowers come in yellow, orange, pink, and white. Some are evergreen, whereas others are *deciduous* (they drop their leaves in the fall). Although some of the species are tropical, here I dwell on the hardy ones.

They basically have the same cultural requirements as Chinese ground orchids (see the previous section) — well-drained soil having plenty of organic matter. In fact, most terrestrial plants prefer this. A majority flower in the spring. They usually require dappled shade and vary somewhat on their cold hardiness, but most will make it in Zone 6b (when mulched over the winter with a couple of inches [5 cm] of organic mulch like bark or pine needles) to Zone 10. If you're in a colder climate, you can overwinter them in pots in a cool garage or basement.

Here are a few that I suggest:

- ***Calanthe discolor* Discolor Hardy Calanthe:** This orchid is naturally found in the woodlands of Japan, so it's most comfortable in a semi-sunny location with moist rich soil. It grows to around 10 inches (25 cm) high, so it's shorter than many of the others. The heavily pleated foliage, which is evergreen in moderate winters, is about 6 inches (15 cm) long and 2 inches (5 cm) wide, and its mid- to late-spring flowers are reddish-brown with a pristine white lip. Like other plants growing in a moist location, watch out for slugs and snails (refer to Chapter 9 for dealing with these pests); other than that they have very few pests. Hardy to Zones 6b to 9b.
- ***Calanthe reflexa* Hardy Reflexed Calanthe Orchid:** Another good choice for a woodland or shade garden, this species (flip to the color insert) has mildly fragrant pink and white flowers that appear later than the others in mid-summer. It grows about 12 inches (30 cm) high and forms attractive clumps in time. Hardy to Zones 6b to 9b.
- ***Calanthe sieboldii* Siebold's Hardy Calanthe Orchid:** This orchid is rare in its native habitat of Japan. It's also one of the easier terrestrial orchids to grow in your garden. This gem grows 20 inches (50 cm) tall and has wide lance-shaped leaves that stay evergreen in mild winters. It displays a flurry of bright yellow flowers in the spring. It's hardy to Zones 7 to 9.

Spiranthes

I have seen some impressive stands of this gorgeous *Spiranthes cernua* var. *odorata* (also called *Spiranthes odorata*) Ladies' Tresses Orchid in the Delaware Valley along the moist edge of a swamp pond in a partially sunny spot, so this gives you an idea of where this orchid is most comfortable. This orchid is one of the few that has almost become a mainstream hardy perennial for wet areas in the garden and is being offered widely. Although its small tubular mostly white flowers, borne on a 12-inch (30-cm) spike in the fall, aren't that impressive in terms of their size and showiness, the jasmine-vanilla fragrance make this terrestrial orchid a standout. It's one of the hardier terrestrial orchids — it's hardy in Zones 4 to 8.

The cultivated variety that is most sold is *Spiranthes cernua* 'Chadds Ford.' It's like a souped-up version of the species with a taller flower spike of 2 to 4 feet (60 to 120 cm) and larger flowers. This orchid is a vigorous grower that will quickly form a respectable clump.

A FUNGUS AMONG US

Terrestrial orchids have a cozy relationship with an organism in the soil called *mycorrhizal fungi.* This symbiotic (mutual-benefit) relationship seems to be most important at the seed germination stage of the plant's growth. During this critical period when this fungus is intertwined around the roots of the orchid seedling, it provides to the orchid water and mineral nutrients while the orchid supplies food in the form of sugars to the fungus.

CONSERVE NATIVE ORCHIDS — BUY FROM ESTABLISHED NURSERIES

Some of the orchids in this chapter are natives, and some are endangered, so use great care in deciding where you get your plants. Although the biggest risk for these plants and other native plants is continuing loss of their habitats due to urban sprawl, you can do your part by not digging these plants from the wild! Not only is this practice against the law in most places, but your chance of this dug orchid surviving in your garden is slim.

Buy your plants from established nurseries that grow them from seed or divisions. You'll be doing the right thing from a conservation point of view, and these nursery-cultured plants have a much higher survival rate than those collected. Be aware that seed-grown orchids are a bit pricey because it takes seven years or so for them to reach mature saleable size!

A dependable authority to trust for recommendations for where to buy ethically produced terrestrial orchids is the New England Wildflower Society (`www.newfs.org`).

Identifying Hardy Slipper Orchids — Not Easy, But So Worth It

The *Cypripedium* species lady's slipper orchids are pretty much the queens of the terrestrial orchids. Their large spectacular flowers resemble their tropical cousins, especially the phragmipediums (that I discuss in Chapter 12).

What makes these different is that they're hardy. However, I'm not going to mislead you. They aren't the simplest plants to grow. They do require attention to special cultural details, but they're worth the effort. A clump of them in full bloom is breathtaking!

Slipper orchids go by different names. Sometimes they are called lady's slipper orchids, lady's-slippers, or lady slipper orchids. I refer to them as hardy lady's slipper orchids.

REMEMBER

Like other orchids, you can purchase these slipper orchids as either seedlings or as mature plants. Which choice is best for you? Selecting the seedling route is much more economical, but before you make this choice, you must pledge to be very vigilant in their culture and have patience. To grow this plant from seedling stage to flowering size can take four to six years. Because the process of growing the seedlings is rather involved, ask for detailed cultural instructions from your supplier.

You may want to consider mature plants because they'll produce flowers sooner than seedlings and aren't quite as delicate. Slipper orchids prefer a semi-shaded spot in soil rich in organic matter that stays moist but not wet. Make sure to request more cultural details from your supplier. Some species that aren't so delicate like *Cypripedium kentuckiense* and *Cypripedium parviflorum* can be successfully grown in pots. Others that are more particular may not be the best choice for a potted plant.

The following sections identify some popular North American natives that are easier to grow and some orchids that are more challenging.

Easy-to-grow North American natives

A total of about 48 species of hardy lady slipper orchids are found in North and Central America, Europe, and Asia in the Northern Hemisphere. Here are a few of these beauties that have a history of success in the garden.

- ***Cypripedium kentuckiense* The Southern Lady's-Slipper:** This slipper (see the color insert) offers the largest flower of the cypripediums and is one of the easiest to grow. Its large yellow pouch is set off by petals and sepals that are striped in burgundy red — a winning combination! Even though it hails from warmer climates, it can do well as far north as New England and the northern Midwest. They grow about 18 inches (45 cm) tall. Zone 3 to 7a.

- ***Cypripedium parviflorum* var. *makasin* Northern Small Flowered Yellow Lady's-Slipper:** Another striking choice for a shade or woodland garden, this orchid's bright yellow pouch contrasts beautifully with the mahogany petals and sepals (see Figure 15-1). Folks have reported good results in growing this variety of this species (also called var. *parviflorum***)** and the next orchid I discuss. Recommended for Zones 2 to 6. Grows to about 18 inches (45 cm) tall.

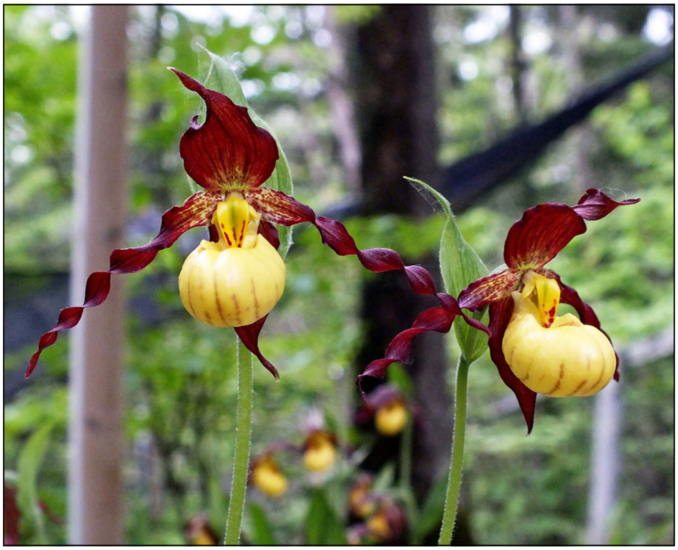


FIGURE 15-1: *Cypripedium parviflorum* var. *makasin* has bright yellow pouch and mahogany petals.

Photo courtesy of Spangle Creek Labs

- ***Cypripedium parviflorum* var. *pubescens* Large Flowered Yellow Lady's-Slipper (see Figure 15-2):** This variety of this species, also called *Cypripedium calceolus* var. *pubescens*), is very much like the Northern Small Flowered Yellow Lady's-Slipper with the difference being the larger flower. I recommend it because it's one of the most vigorous of hardy slipper orchids. It does require near freezing temperatures of about four months, so it's not a good choice for folks living in areas with warm winters. Grows about 20 inches (50 cm) tall. Zones 2 to 6.
- ***Cypripedium reginae* Showy Lady's-Slipper Orchid:** The large soft pink pouch set off against the white petals and sepals makes this orchid (see the color insert) a stunner. It's most widespread in the northeastern part of the United States. This species also has a pure white form. It's one of the hardiest slippers and is recommended for Zones 2 to 6. Grows about 18 inches (45 cm).

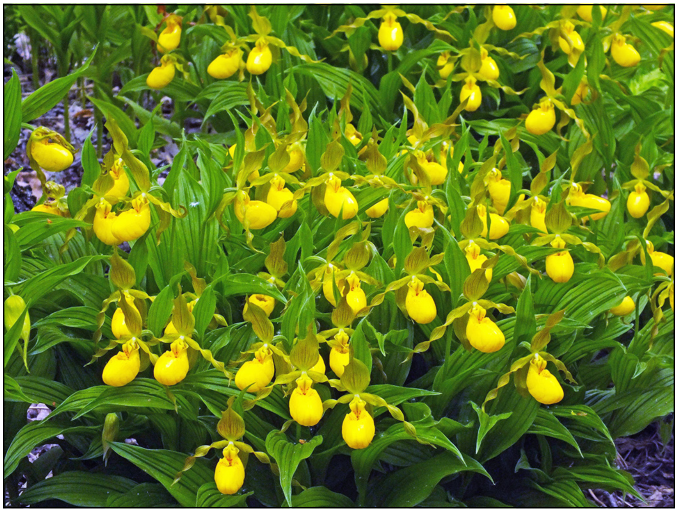


FIGURE 15-2: *Cypripedium parviflorum* var. *pubescens* makes quite a show in the garden with its bright yellow pouches.

Courtesy of Spangle Creek Labs

More adventuresome hardy slippers

I recommend that you cut your teeth on the slippers in the previous section because they have a history of being easier to grow and won't set you back financially. After you have a bit of confidence, you may want to search out a couple of the following beauties:

- ***Cypripedium franchetti* Franchetti Lady's-Slipper:** This large flowered species (see Figure 15-3) from Mainland China displays a white pouch and petals striped in dark pink. The plant is smaller in stature than some of the other slippers at under 12 inches (cm) high. Zones 4 to 8.
- ***Cypripedium japonicum* Japanese Lady's-Slipper:** The heavily pleated fanlike foliage in addition to its delicate pink-lipped flower make this slipper a sensational standout. This definitely isn't a beginner's orchid. See the color insert for an example.
- ***Cypripedium segawae* Taiwanese Lady's-Slipper (see Figure 15-4):** This slipper, also called *Cypripedium segawai,* from Asia is endangered in its native land. It has quite an unusual flower with a green pouch specked in red and green petals. Zones 6a to 7a.

TIP

Choose the species that is best suited to your environment. You're going to have the most success with the orchids that naturally grow in your climate zone because they've adapted to your native environment. Each species has its own preference for maximum summer temperatures and necessary winter cooling (called *vernalization*).

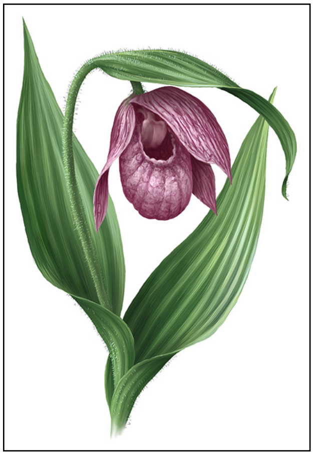


FIGURE 15-3: *Cypripedium franchetti* is a smaller growing slipper orchid.

Drawing courtesy of Steven Buchanan

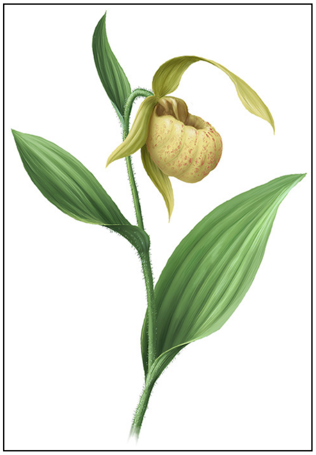


FIGURE 15-4: *Cypripedium segawae* is an endangered beauty from Asia.

Drawing courtesy of Steven Buchanan

Dipping Your Toe In — A Few Others to Try

You can also explore many other lesser known and grown hardy orchids. Here are a few:

- ***Aplectrum hyemale*** **Adam-and-Eve Orchid:** Found across the eastern United States and Canada, this orchid sports a cluster of white and purple flowers in the spring. It usually has evergreen foliage. Zones 3 to 8.

- ***Calopogon turberosus* Grass Pink Orchid:** The common name describes this hardy and easy-to-grow orchid. It has grasslike foliage and pink tropical flowers. It's commonly found across the eastern and central North America, but it does prefer a sunny spot with moist soil. Zones 3 to 9.
- ***Epipastis gigantea* Giant Stream Orchid:** This orchid prefers poorly drained soils as the common name implies. It reaches 12 to 30 inches (30 to 75 cm) high and seem to be impervious to all pests including deer. Its green-brown flowers appear in late spring to early summer. Zones 5 to 10.
- ***Habenaria radiata* White Egret Orchid:** The fringed white elegant flower of this orchid does resemble a bird in flight. It grows about 5 to 9 inches (12 to 22 cm) and prefers damp but well-drained soil. Zones 5 to 10.
- ***Platanthera species*, Fringed Orchid:** This genus has several species. They grow from about 1 to 4 feet (30 to 120 cm), depending on the species, and bear highly attractive fringed flowers that vary in color from pink to white to yellow in late spring to early summer. They all prefer moist well-drained soil in semi-shady locations. They're a super butterfly attractor. Zones 3 to 8.

4

The Part of Tens

IN THIS PART . . .

Choose the easiest orchids to grow.

Beware of the most common ways orchids die.

Discover how to make your orchids rebloom.

Find out some answers to the most commonly asked questions about orchid culture.

IN THIS CHAPTER

- » Finding the orchid that's right for you
- » Choosing an orchid that grows well where you live

Chapter 16

The Ten (or So) Easiest Orchids to Grow

Throughout this book, I let you know about orchids that aren't temperamental or especially demanding, but the orchids in this chapter are some of the most satisfying to grow because of their high performance and low maintenance. For more specific cultural information on these orchids and others, see the chapters in Part 3.

Moth Orchids

You can find so many excellent moth orchids, *Phalaenopsis* hybrids, that choosing a bad one would be a challenge. In recent years, the breeders of moth orchids have reached a high level of perfection with these flowers, which means that the ones you buy at the discount center for $20 to $35 (or sometimes even less) would have been prize winners several years ago.

TIP

Look for the full-size hybrids with long elegant flower spikes with flowers of about every color and hue or the multifloral type that has many smaller flowers, up to about 2 inches (5 cm) in size, on a very compact plant.

Lady of the Night

This native of Mexico, *Brassavola nodosa,* got its common name, Lady of the Night, from its glorious freesia evening scent. It grows best in strong light with warm temperatures and will reward you with single or clusters of white spidery flowers up to 6 inches (15 cm) across, which can appear a few times a year.

Lady of the Night is a very compact-growing orchid with tubular leaves. It's usually not more than a foot tall and grows in clumps. It will perform best if it isn't divided and is allowed to grow into a nice large plant.

Maudiae Type Lady's Slipper Orchid

Most Asian Lady's Slipper orchids, all in the genus *Paphiopedilum*, are among the easiest of orchids to grow, but this type of Lady's Slipper stands out as especially undemanding. The most common of the maudiae types display elegant green and white flowers (see the color section of photographs for an example). Others of this type have dramatic burgundy markings and are referred to as *vinicolors.*

Even when this plant isn't in flower, its foliage is stunning with its marbled pattern against a dark green base. These orchids do well in modest light and normal room temperatures. They only grow about 8 to 10 inches (20.3 to 25.4 cm) tall, so they fit easily on any windowsill or under lights. To see these plants really shine, let them get larger and develop multiple growths, which won't take long because they're so robust. Bigger multi-growth plants often bloom more than once a year.

Cockleshell Orchid

One of the most resilient of orchids, the Cockleshell Orchid (*Prosthechea cochleate*) seems to keep blooming despite less-than-ideal conditions. One of the orchids naturally found in Florida, this Cockleshell orchid has fascinating flowers that appear to look upside-down. The cockleshell part of the flower is striped with purple veins against a light green background, and the rest of the flower consists of segments that are narrow, green, and somewhat spidery looking. After this orchid is established, it will bloom multiple times in a row, even on its older spikes, so it can have flowers for six months or longer. It grows well under lights or on a bright windowsill.

Sharry Baby Oncidium

This oncidium is thought to be one of most popular orchids in the world. And it's not difficult to see why. It has a great deal to offer any orchid lover.

Sharry Baby blooms dependably — usually around Christmastime — and when it does, you're treated to a flurry of many ½-inch (1.5-cm) flowers that are yellow overlaid with burgundy covering a spike of up to 30 inches (75 cm). What a show! And the pièce de résistance is that the flowers have the delicious fragrance of chocolate and vanilla!

REMEMBER

Because this orchid can get tall, place it near a sunny window that has some headroom. Many different color forms of this wildly popular orchid are available.

Twinkles Oncidium

You can find a multitude of varieties of this charming and popular miniature orchid in various color combinations of red, white, and yellow.

Because this plant only grows 6 to 8 inches tall (15 to 20 cm), it can fit on any windowsill or under lights. It sometimes blooms more than once a year — usually in the spring, occasionally in the fall — and has a scent that reminds me of a fresh morning's air.

Mari's Song Cattleya

This drastic hybrid cattleya belongs to a category of plants called *minicatts* (miniature cattleyas). They all take up much less space than the standard-sized cattleya, and many of them bloom more than once a year. This particular variety of minicatt is popular because it's easy to grow, compact, has gaily tricolored, 4½-inch (11-cm) flowers, and is very fragrant.

Fan-Shape Orchid

I love this orchid. This fan-shape orchid formally called *Cochleanthes amazonica* has handsome glossy green foliage. Mine often blooms twice or more a year with 2-inch (5-cm) snow-white flowers that are veined in dark purple and smell like sweet candy. Another worthy species in this genus is *Cochleanthes discolor*. Hybrids *Cochleanthes* ‘Moliere’ and *Cochleanthes* ‘Amazing’ are also good choices. All of them have similar cultural requirements as moth orchids and are just as undemanding.

Phalaenopsis Dendrobium

I know this name is confusing. Its Latin name is *Dendrobium phalaenopsis*. Is this a dendrobium or a phalaenopsis? It’s actually a dendrobium that has a flower shaped very similar to a phalaenopsis. This orchid does best in a bit stronger light than phalaenopsis, but other than that it’s an easy grower that comes in almost every color and color combination imaginable. The total plant height varies from just a few inches (5 cm) to several feet tall (a meter or more).

IN THIS CHAPTER

- Knowing you're not alone if your orchid bites the bullet
- Helping your orchids live a long life

Chapter 17

Ten Common Reasons That Orchids Die (and How to Avoid 'em)

Sooner or later, everyone loses a few orchids to the Grim Reaper, but some causes of death take more orchid lives than they should. Being on the lookout to prevent the problems in this chapter will save many of your orchids.

Overwatering

Overwatering is the big killer of orchids. Some people just can't help themselves. Watering is so much fun, and you feel like you're doing something to help your orchids when you're watering them.

TECHNICAL STUFF

When orchids die from overwatering, it isn't really the result of too much water. It's actually caused by too little air. There's just so much open space in any potting material, and water naturally displaces air, so if you apply it too often, there's no room for air. And your orchid needs air for healthy root growth. If it doesn't get enough air, the roots rot and die.

If overwatering is a frequent problem for you, consider switching your potting material to one that drains faster and doesn't retain as much water, as I discuss in Chapter 7. In addition, see Chapter 6 for tips on how to properly water your orchids and an emergency treatment to try if any of your overwatered orchids start going downhill.

Underwatering

Ironically, just as overwatering is a big killer, so is underwatering. In this case, the lack of water leads to root damage by dehydration (see Chapter 6 for more details). Because orchid potting material drains much more rapidly and tends to hold less moisture than materials commonly used for other plants, some people tend to underwater. Also, remember that the fresh potting material dries out much more quickly than older potting material does.

TIP

Be sure to premoisten the orchid potting material before you use it. Doing so makes it more water-retentive. Also, some potting materials retain water longer. Check out Chapter 7 for orchid potting tips and information.

Too Much Light or Heat

Light and heat are related to one another. Frequently, excessive light leads to high temperatures. When the orchids receive too much light, the heat starts to build up inside the leaf. Think of the orchid leaf's skin (called the *epidermis*) being like a plastic bag with very small holes in it. Inside of this plastic bag is the interior of the leaf. When excessive heat gets trapped inside the leaf, it literally cooks and destroys the leaf plant tissue. Large black circular dead spots form, or in extreme cases, the entire orchid collapses. After this damage is done, you can't do anything about it.

TIP

When the orchid is in full illumination, feel the leaf surface with your hand. If it's hot to the touch, move the orchid to where it gets less light. See Chapter 5 for more information on light and temperature requirements for orchids.

Leaving Orchid Foliage Wet Overnight

Leaving orchid foliage wet overnight is asking for trouble in the form of leaf spots and crown rot disease. (The *crown* is the growing point of the orchid.) Ensure that there is no water in the crown after watering. Water your orchids in the morning or early afternoon, so the leaves have plenty of time to dry before nightfall.

If you can catch these leaf diseases early, you may be able to save the orchid. But after the disease (which shows up as soft, mushy tissue, that eventually turns black) gets to the growing point of the plant, it's good-bye for your orchid. For more information on orchid diseases and their control, see Chapter 9.

Too Much Fertilizer

Fertilizers are salts, and salts, in concentrated form, are types of *herbicides* (plant poisons). Applying too much fertilizer will dehydrate the orchid roots. Signs of too much fertilizer are black root tips or black or brown leaf tips. So, when you fertilize, be careful not to apply more than the recommended dosage, and only use a fertilizer when the plant is actively growing and when the growing media is damp. If you aren't sure how much fertilizer to apply, err on the low side. For more details on fertilizing orchids, see Chapter 6.

Improper Use of Pesticides

When pesticides are used properly, they're safe for both you and your plants. However, if they're applied at too high of a concentration or applied when the plants are dry or the air temperature is too high, severe damage to the orchid plant can result.

Also, many pesticides are dissolved and mixed in with a type of oil, which in and of itself can cause leaf damage, especially if the material is applied in bright, hot sunlight.

As a result, use care with these materials and always read the label before applying them. See Chapter 9 to see which pesticides are safest and most effective to use.

Insect Infestation

Catching insect problems in the early stages is extremely important. If you realize that your orchid is completely covered with an insectlike scale or mealybugs, getting rid of all these critters is very difficult and requires multiple sprayings to get them under control.

TIP

If you have a severe infestation, trashing the plant for the sake of others in your collection can be the best approach; you don't want to expose your other plants to these bugs. For more information on common orchid pests and their control, check out Chapter 9.

Purchase of Sick Plants

Some orchid growers are Florence Nightingale types who feel it's their mission to save an orchid that looks sick. So, they buy it, usually at a great discount. In most cases, these orchid lovers don't get a deal at all.

TIP

I highly recommend you resist the temptation to buy an unhealthy orchid and try to nurse it back to health. If an orchid is in poor condition and the leaves are wilting or shriveled (which usually indicates dead or damaged roots), it's often on an unstoppable death spiral and the likelihood of your bringing it back to robustness is slim to none.

Poor Water Quality

In certain parts of the United States, notably in the West, some local water has a high salt content, which can be very damaging to orchids. It can cause the same problems as overfertilizing (see the section, "Too Much Fertilizer," earlier in this chapter).

TIP

If you have doubts about the quality of your water, hire a company to test your water or better yet use a lab that tests for high soluble salts because they're usually the most harmful. Also, don't use water that has been treated with a water softener on your orchids because it usually has a high amount of salt. For more information on water quality, see Chapter 6.

Inadequate Ventilation

Orchids don't appreciate stale air. When air isn't circulated, fungi and bacterial diseases flourish. Moving air also evaporates moisture on leaves (moisture on leaves is another cause for disease problems). Air movement reduces temperature stratification. In other words, it blends hot air that normally goes up with colder air that comes down.

To make your orchid happy, invest in an overhead ceiling fan or oscillating fan to keep the air gently moving. The fan can make a great difference in the health of your orchids. For more on ventilation, see Chapter 5.

IN THIS CHAPTER

- **Figuring out whether orchids are right for you**
- **Easing your mind with the orchid answers you need**

Chapter 18

The Ten Most Frequently Asked Questions about Orchids

This entire book covers everything you need to know about orchids, but in this chapter, I answer some of the most common questions that beginning orchid growers have.

Are Orchids Difficult to Grow?

Orchids aren't difficult to grow — they just have particular requirements that are somewhat different from many other houseplants you may be familiar with. Thanks to modern orchid breeding, many of the orchids available for beginning orchid lovers are vigorous growers that are adaptable to a wide range of growing situations and bloom easily and frequently.

Selecting the right orchid for your conditions is one of the keys to success. See Chapter 2 to help you choose which one will do well for you.

Why Should I Grow Orchids?

Many expert and amateur gardeners consider orchids to be the most beautiful and exotic members of the plant family. Orchids are a huge group of plants with diverse cultural requirements. This means that, no matter where you live, you can find a group of orchids that will suit your growing area. Also, because the flower forms, fragrances, and colors are so diverse, you can find an orchid to satisfy your taste.

Growing orchids is more than merely cultivating plants. You'll be joining a fraternity of avid (if not fanatical) orchid people who share your interests. Soon you may become a member of an orchid society (see Appendix A), and you may visit various orchid growers and attend orchid shows. You'll form new friendships with others who share your passion. It's said that, after you're bitten by the orchid bug, there is no known cure. But what a wonderful affliction!

Do I Need a Greenhouse to Grow Orchids?

Absolutely not! Years ago, orchids were reserved for wealthy people who could afford elaborate greenhouses with an attending staff of professional horticulturists. Although a few of these places are still around today, most people now grow orchids on windowsills and under fluorescent lights. I've grown most of my orchids that way and have been pleased to produce plants and flowers that look as good as those grown in a greenhouse. So, don't despair: If you have a sunny window or a place to set up some lights (and many types of lights are now available — check out Chapter 5), you, too, can grow these beauties.

Are Orchids Expensive?

They don't need to be. Sure, if you're bound and determined, you can spend thousands of dollars on mature, awarded plants. But today you can buy blooming-size, fine-quality, healthy beginner orchids ranging in price from $25 to $45, sometimes even less at box stores or grocery stores. That's less than the price of a flower arrangement from the florist, and an orchid's flowers will usually last much longer. After the orchid is finished flowering, you still have a plant ready to bloom with even more flowers every year. They're really quite the floral bargain.

How Long and How Often Will Orchids Bloom?

This varies, depending on the type of orchid. A few orchids only bloom a couple of days, but most will have flowers that last anywhere from a few weeks to a couple of months. Some with the longest-lasting flowers are the slipper and moth orchids. Many orchids bloom once a year, whereas others can bloom two or three times a year, especially if they're older well-established plants.

What Makes an Orchid an Orchid?

When many people see orchids, they can't imagine what so many diverse plants have in common that makes them all orchids. They look so different! You have to closely examine the flower for the answers. If you study the inner part of the flower, you'll see a clublike structure that houses the male and female flower parts *(stamens* and *pistils)* called the *column*. All orchids have this unique structure. Most also have a large and conspicuous center petal called a *lip.*

For more information about how orchid plants and their flowers are distinctive, see Chapter 1.

Are Orchids Fragrant?

Not all orchids are fragrant, but many are. A wonderful aspect of orchid fragrance is their range of scents. Some smell like other flowers (carnations, jasmine, gardenia, rose), whereas others have the scents of spices and foods (vanilla, citrus, cloves, chocolate, coconut, licorice, honey, cinnamon, grapes). Many of the orchids that I mention in this book are fragrant.

Some orchids even reek! These orchids are pollinated by flies and other insects attracted to *carrion* (rotted meat). Fortunately, very few orchids fall in this category, and they're easy to pick out when selecting orchids from a grower's greenhouse.

See the Cheat Sheet at `www.dummies.com` (just search for "Orchids For Dummies Cheat Sheet") for a list of some wonderfully fragrant orchids.

Where Can I See the Best Collections of Orchids?

Many public gardens display a sampling of these plants because they put on such a show. For some particularly outstanding exhibits of orchids, check out the following:

- **The American Orchid Society,** Fairchild Tropical Botanic Garden 10901 Old Cutler Road, Coral Gables, FL 33156; phone: 305-740-2010, fax: 305-747-7154; email: `theAOS@aos.org`; website: `www.aos.org/`.
- **Atlanta Botanical Garden,** 1345 Piedmont Ave. NE, Atlanta, GA 30309; phone: 404-876-5859; website: `www.atlantabotanicalgarden.org`.
- **Daniel Stowe Botanical Garden,** 6500 South New Hope Road, Belmont, NC 28012; phone: 704-825-4490; website: `www.dsbg.org/`.
- **The Huntington Library, Art Museum, and Botanical Gardens,** 1151 Oxford Road, San Marino, CA 91108; phone: 626-405-2100; website; `www.huntington.org/gardens`.
- **Longwood Gardens,** Route 1, P.O. Box 501, Kennett Square, PA 19348-0501; phone: 610-388-1000; website: `www.longwoodgardens.org`.
- **Los Angeles County Arboretum & Botanic Garden,** 301 N. Baldwin Ave., Arcadia, CA 91007; phone: 626-821-3222; website: `www.arboretum.org`.
- **Missouri Botanical Garden,** 4344 Shaw Blvd., St. Louis, MO 63110; phone: 800-642-8842 or 314-577-9400; website: `www.mobot.org`.
- **New York Botanical Garden,** Bronx River Parkway and Fordham Road, Bronx, NY 10458-5126; phone: 718-817-8700; website: `www.nybg.org`.
- **San Diego Zoo,** 2920 Zoo Drive, San Diego, CA 92101; phone: 619-234-3153; website: `www.sandiegozoo.org`.

Check out these additional sites to see more orchids:

- For a list of orchid events in the United States, check out the American Orchid Society Calendar at `www.aos.org/news-events/event-calendar.aspx`.
- For Canadian Orchid Societies, check out `https://canadianorchidcongress.ca/cocmemb/`.

- Countless orchid societies exist around the world, and most of them have shows where you can see orchids displayed and sold. Check out `www.orchidmall.com/society.htm`.
- Many commercial growers also have fine displays of orchids at their greenhouses. Check out orchid suppliers at `www.orchidmall.com/plants.htm`.

Are Any Orchids Hardy?

Most orchids are from tropical or semitropical areas and are intended to be grown as indoor houseplants in most of the United States. In warmer states, like parts of California, Texas, and Florida, some of these orchids can be grown outdoors with winter protection.

However, other native orchids can only grow well in very northern climates (check out Chapter 15). For example, the various lady's slipper orchids are the ones most admired in this group. In fact, the Spotted Lady's Slipper is only found in the Yukon and Alaska!

Are Orchids Parasites?

Orchids aren't parasites. Some people, who have seen orchids growing in the wild in the tropics, have noticed that many of them are attached to the limbs and trunks of trees, so they make the conclusion that, like mistletoe, orchids are parasites. Parasites, by definition, get their food at the expense of their host plants. That's not the case with orchids. They're merely using the trees or shrubs as places to grow. Orchids are often found in the crotches of the limbs where water and nutrients from roosting birds naturally accumulate. Orchids have roots that can absorb these nutrients, and the high perches in the trees afford them plenty of moist air circulation, natural rainfall, and exposure to sunlight.

IN THIS CHAPTER

- **Knowing how to keep your orchids blooming**
- **Giving your orchids what they need**

Chapter 19

The Ten Most Common Reasons Why Orchids Don't Bloom

Nothing is more frustrating than having your orchid plants look good and healthy but still not bloom. This is a common problem that can be easily remedied, and in this chapter, I show you how.

Not Enough Difference between Day and Night Temperatures

The most common reason that orchids don't bloom indoors is that their growing environment doesn't have enough of a change in temperature between day and night. In orchids' natural habitats, evening temperatures are at least 10 degrees Fahrenheit lower than the daytime temperatures. This temperature difference triggers the orchids to start developing flowers. In many home environments, the temperature doesn't vary much between day and night.

TIP

Get yourself a maximum-minimum thermometer (see Chapter 3) and place it in your growing room. This thermometer will tell you if you need to move the plant somewhere cooler in the evening, like closer to the window.

If you take your orchids outdoors during the summer (see Chapter 5), you'll easily be able to provide this temperature difference. The temperature in my orchid summering area outdoors drops in the evening at least 15 degrees Fahrenheit or more during late summer and early fall.

Too Moist during the Winter

Several orchids, like some of the dendrobiums, require a very dry period, up to several weeks, during the winter, when you should give them very little water. This mimics their native habitat, in which their winters are dry. This dry period triggers flower buds to form. Then when watering or natural rainfall begins in the spring, the buds are ready to swell and produce flowers. Check online or from your orchid supplier to figure out what winter moisture requirements they have.

Too Little Light

If the leaves of your orchids are very dark green, the new growth is *stretched* (longer and thinner compared to the older growth), and the leaves on the stems are farther and farther apart, these are signs that your orchid isn't receiving enough light. Orchids will survive in this lower light, but they won't bloom. They need more energy from light in order to produce flowers.

TIP

If your orchid is displaying these symptoms, gradually increase its exposure to light by placing it in a brighter window or moving it closer to lights. See Chapter 5 for more information on orchid light requirements and how to meet your orchid's needs.

Excessively High or Low Temperatures

Excessively high or low temperatures can either prevent buds from forming or can cause the buds that are starting to develop to shrivel and fall off. Unfortunately, flower buds are extremely vulnerable to any forms of environmental stress, and they react to this stress by falling, shrinking, and drying up before they open.

TIP

When orchids are shipped in cold weather, the low temperatures that they experience in transit can cause them to drop their buds. When you buy orchids during the winter that have been shipped to the store, wait until they've been in the store for a day or so to see if the buds have been affected by their trip.

Not Using a Fertilizer or Using One with Too Much Nitrogen

Most orchids have relatively low nutrient needs, but because they're usually grown in bark mixes that have few nutrients, some type of fertilizer is usually necessary to supply their basic requirements. See Chapter 6 for more-specific orchid fertilizing guidelines.

Immature Plants

If you buy an orchid that hasn't bloomed, it may not yet have reached its mature size. The amount of time it takes for an orchid to mature varies a great deal depending on the type of orchid. For instance, moth orchids are very fast to mature, whereas some of the others may take years. Plants that haven't yet bloomed are usually sold as one of the following:

- Seedlings (which can take several years to reach maturity)
- NFS (*near flowering size,* which usually bloom within a year)
- FS (*flowering size,* which means they've reached mature size and will usually bloom within several months)

Too Low Humidity

If the air is too dry when the buds are forming, they'll sometimes dry up before they open. To prevent this from happening to your orchids, keep the humidity in your growing area at about 50 to 60 percent. See Chapter 5 for tips on how to easily raise the humidity around your orchids.

Disease, Insects, or Mice

Orchid buds that are ravaged by insect pests or attacked by diseases will either shrivel in place or, when they open, will be deformed. Follow the disease and insect prevention and control methods in Chapter 9.

Some chemical pesticide sprays that you may use on insects and disease can cause damage to the flower buds, so be careful to spray-test a few buds at first before you apply the material to the entire plant. If possible, wash the bugs off with warm water instead of applying chemical sprays to the buds.

Mice also have the annoying habit of waiting until the flower buds are plump and just ready to open before they decide to make a meal of them. If your flower buds just disappear one night, suspect mice as the likely culprits. To confirm that mice are the troublemakers, consider putting out some baited traps.

Not Enough Water

When flower buds are starting to swell, their cells are filling up with water like a balloon. If sufficient water isn't available to the developing buds when all this is happening, they won't fully develop and instead will shrivel and never recover.

Cold water can also have the effect of causing the buds to drop off before the flowers open. To prevent this, use water that is room temperature or slightly warmer.

Recently Transplanted and Divided

When an orchid is transplanted, roots are often damaged, which causes stress to the plant by reducing the roots' ability to effectively supply water to the buds.

Interestingly, after the flower is fully formed and open, transplanting and or dividing rarely does much harm. In fact, some people routinely transplant their orchids when they're in flower, although I think you're better off waiting until right after they flower to transplant them. For more information on transplanting and dividing, see Chapter 7.

Appendix A

Additional Orchid Resources

One of the fun things about growing orchids is constantly learning more about them. Fortunately, a wealth of resources from local to national to international societies, orchid shows of all types and locations, informative magazines, and a plethora of online resources, is available to enlighten you. In this appendix I list some of the most helpful.

Orchid Societies

Various societies specialize in specific kinds of orchids, but the ones in this section are among the biggest and most established. Besides supplying dependable and knowledgeable information, they're also a great source for recommendations of reputable orchid growers and suppliers and orchid growing supplies.

Many countries have national orchid societies, and many other areas have their own orchid groups. We had three orchid groups when I lived in a small Mexican community. Here are my recommendations:

The American Orchid Society: Phone: 305-740-2010 Email: `theaos@aos.org`; Website: `www.aos.org`. This orchid society is simply fabulous! I've been a member for more than 40 years. Its monthly publication, *Orchids,* is filled with sumptuous color photos and articles that are of interest to beginners as well as aficionados. Its website is full of information, including cultural sheets, a calendar of orchid events, the society's own high-quality booklets, a discussion forum, links to all the affiliated societies through the United States (and the world), and a software program that contains more than 100,000 orchid images. If you're bitten by the orchid bug, you owe it to yourself to join this fine organization.

The American Orchid Society has a service called Orchid Marketplace (`https://marketplace.aos.org/`) that is a super place to find orchid vendors. You can search this service by keyword, product category, and specialties to find the perfect orchid you're looking for.

International Phalaenopsis Alliance: Website: `www.phal.org`. For you moth orchid lovers, their superb, online full-color journal, *Phalaenopsis,* is a must and is the primary benefit of joining this organization. It also sponsors national and regional orchid workshops.

The Orchid Digest: Email: `info@orchidDigest.org`; Website: `www.orchiddigest.org`. This group produces an excellent quarterly magazine, *Orchid Digest.* It's an elegant and highly informational publication that I can't imagine being without.

Royal Horticultural Society: U.K. Phone: +44 020 3176 5800; Email: `customercare@rhs.org.uk`; Website: `www.rhs.org.uk`. This is the oldest orchid society in the world and so is its periodical, *The Orchid Review. The Orchid Review,* published four times a year, is a bit more esoteric than *Orchids* and *Orchid Digest,* but if you just can't get enough information about orchids, this is another one to add to your list. To subscribe to *The Orchid Review,* go to the RHS website at `www.rhs.org.uk/about-the-rhs/publications/the-orchid-review`.

Canadian Orchid Congress: Website: `https://canadianorchidcongress.ca/`. The site connects you to all of the orchid societies in Canada as well as provides orchid information including a list of native orchids, orchid events, orchid vendors, newsletters, tips on importing orchids into Canada, a list of speakers, and much more.

Slipper Orchid Alliance: Website: `https://slipperorchid.org/`. If you love slipper orchids like I do, this organization is one to join. Its bulletin is always filled with what's new and old with this fascinating group of orchids.

Despite the Internet, orchid periodicals are far from dead. In addition to the ones I mention here, check out `www.orchidnerd.com/orchid-periodicals.html`.

Online Resources

You can find a wide array of groups online focused on orchids. It seems no matter what country you live in or what language you speak, an orchid website is out there for you.

If you want to be overwhelmed, just type "Orchids" into your search engine browser and be prepared to be wowed with choices and recommendations.

The same is with a Facebook groups search. The last time I checked there were at least 75 orchid groups, with thousands of members, which discuss about every type of orchid and orchid growing issue.

In addition, many orchid vendors have very informational sites, and scanning through all the images, webinars, forums, chats, and galleries is a real treat. Here are a few:

The Orchid Mall: Website: `www.orchidmall.com/index.htm`; this site lists a huge number of orchid plants and orchid supply vendors.

Orchid Species: Website: `www.orchidspecies.com/`; this site is a valuable source for finding out about orchids species.

Orchid Web: Website: `www.orchidweb.com/orchid-classes`; this site has some recorded classes.

Orchid Wire: Website: `www.orchidwire.com/`; this site says that its mission is "connecting a world or orchids," and it does with more than 100 orchid resources in 50 countries.

Software

One software I use extensively is Orchidwiz. This amazing program, albeit somewhat expensive, is user friendly, updates every quarter to keep up with orchid name changes (which are a ton), and adds images of more than 200,000 orchids. Among its many features, it also helps you search for the correct orchid name, supplies images of the orchid, and lets you know whether the orchid is native or hybrid and who bred it and when. You can keep track of all the pertinent details about the orchid you own (yes, I know I am obsessive!). Honestly, you could spend the whole day playing with this software.

Pronunciation Guide: How to Say the Most Common Orchid Names

The number of new names given to orchids has increased exponentially over the last few years, so I narrow down this list to the ones you're mostly likely to encounter in Table A-1.

TABLE A-1 Pronouncing Common Orchids

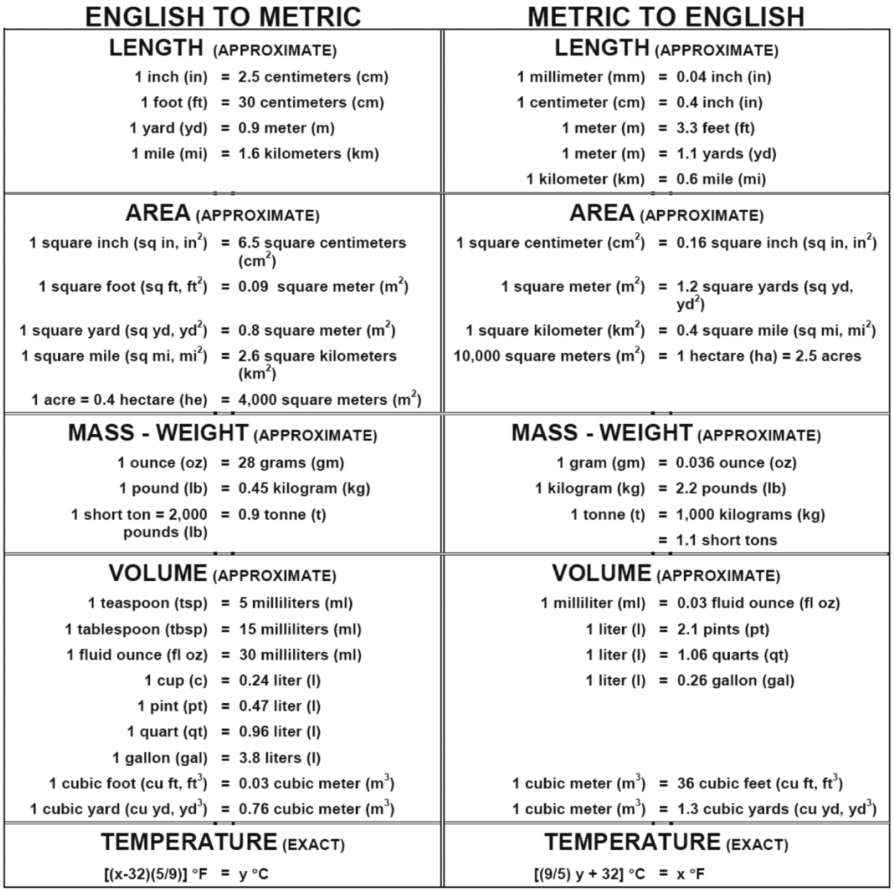
Genus	Abbreviation	Pronunciation
Aeranthes	Aerth.	ay-er-*an*-thees
Angranthes	Angth.	an-*gran*-theez
Brassavola	B.	bra-*sah*-vol-lah
Brassia	Brs.	brass-*ee*-ah
Brassocattleya	Bc.	brass-oh-*kat*-lee-ya
Brassolaelia	Bl.	brass-oh-*lay*-lee-yah
Brassolaeliocattleya	Blc.	brass-oh-lay-lee-oh-*kat*-lee-yah
Bulbophyllum	Bulb.	bulb-oh-*fill*-um
Catasetum	Ctsm.	kat-a-*see*-tum
Cattleya	C.	*kat*-lee-ya
Cochleanthes	Cnths.	kok-lee-*an*-theez
Coelogyne	Coel.	see-*loj*-in-ee
Coryanthes	Crths.	kory-*an*-theez
Cymbidium	Cym.	sim-*bid*-ee-um
Dendrobium	Den.	den-*droh*-bee-um
Encyclia	Encycl.	en-*sik*-klee-ah
Epidendrum	Epi.	eh-pi-*den*-drum
Epilaelia	Epl.	eh-pi-*lay*-lee-ah
Laelia	L.	*lay*-lee-ah
Laeliocattleya	Lc.	lay-lee-oh-*kat*-lee-ya
Lycaste	Lyc.	lye-*kass*-tee

Genus	Abbreviation	Pronunciation
Miltonia	Milt.	mil-*tone*-ee-ah
Miltonidium	Mtdm.	mil-tone-*id*-ee-um
Miltoniopsis	Mltnps.	mil-tone-ee-*op*-sis
Odontobrassia	Odbrs.	oh-don-toh-*brass*-ee-ah
Odontocidium	Odcdm.	oh-don-toh-*sid*-ee-um
Oncidiuim	Onc.	on-*sid*-ee-um
Paphiopedilum	Paph.	paff-ee-oh-*ped*-di-lum
Phalaenopsis	Phal.	fal-en-*op*-sis
Phragmipedium	Phrag.	frag-muh-*pee*-dee-um

Appendix B

English-Metric Conversion Tables

All the measurements in this book are in English measures and weights, and we realize that much of the world's gardeners use the metric system so we include this conversion to help you convert the most common weights and measures that you'll encounter in the garden. Many field guides to plants, insects, and other creatures use the metric system, as do scientific references. Most U.S. seed and nursery websites and catalogs use inches.



ENGLISH TO METRIC		METRIC TO ENGLISH	
LENGTH (APPROXIMATE)		**LENGTH** (APPROXIMATE)	
1 inch (in)	= 2.5 centimeters (cm)	1 millimeter (mm)	= 0.04 inch (in)
1 foot (ft)	= 30 centimeters (cm)	1 centimeter (cm)	= 0.4 inch (in)
1 yard (yd)	= 0.9 meter (m)	1 meter (m)	= 3.3 feet (ft)
1 mile (mi)	= 1.6 kilometers (km)	1 meter (m)	= 1.1 yards (yd)
		1 kilometer (km)	= 0.6 mile (mi)
AREA (APPROXIMATE)		**AREA** (APPROXIMATE)	
1 square inch (sq in, in^2)	= 6.5 square centimeters (cm^2)	1 square centimeter (cm^2)	= 0.16 square inch (sq in, in^2)
1 square foot (sq ft, ft^2)	= 0.09 square meter (m^2)	1 square meter (m^2)	= 1.2 square yards (sq yd, yd^2)
1 square yard (sq yd, yd^2)	= 0.8 square meter (m^2)	1 square kilometer (km^2)	= 0.4 square mile (sq mi, mi^2)
1 square mile (sq mi, mi^2)	= 2.6 square kilometers (km^2)	10,000 square meters (m^2)	= 1 hectare (ha) = 2.5 acres
1 acre = 0.4 hectare (he)	= 4,000 square meters (m^2)		
MASS - WEIGHT (APPROXIMATE)		**MASS - WEIGHT** (APPROXIMATE)	
1 ounce (oz)	= 28 grams (gm)	1 gram (gm)	= 0.036 ounce (oz)
1 pound (lb)	= 0.45 kilogram (kg)	1 kilogram (kg)	= 2.2 pounds (lb)
1 short ton = 2,000 pounds (lb)	= 0.9 tonne (t)	1 tonne (t)	= 1,000 kilograms (kg)
			= 1.1 short tons
VOLUME (APPROXIMATE)		**VOLUME** (APPROXIMATE)	
1 teaspoon (tsp)	= 5 milliliters (ml)	1 milliliter (ml)	= 0.03 fluid ounce (fl oz)
1 tablespoon (tbsp)	= 15 milliliters (ml)	1 liter (l)	= 2.1 pints (pt)
1 fluid ounce (fl oz)	= 30 milliliters (ml)	1 liter (l)	= 1.06 quarts (qt)
1 cup (c)	= 0.24 liter (l)	1 liter (l)	= 0.26 gallon (gal)
1 pint (pt)	= 0.47 liter (l)		
1 quart (qt)	= 0.96 liter (l)		
1 gallon (gal)	= 3.8 liters (l)		
1 cubic foot (cu ft, ft^3)	= 0.03 cubic meter (m^3)	1 cubic meter (m^3)	= 36 cubic feet (cu ft, ft^3)
1 cubic yard (cu yd, yd^3)	= 0.76 cubic meter (m^3)	1 cubic meter (m^3)	= 1.3 cubic yards (cu yd, yd^3)
TEMPERATURE (EXACT)		**TEMPERATURE** (EXACT)	
[(x-32)(5/9)] °F	= y °C	[(9/5) y + 32] °C	= x °F

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About the Author

Steven A. Frowine first started growing orchids under lights when he was in high school. Since then, his love and sometimes obsession for orchids has continued to grow. He has tended orchids professionally as a horticulturist, when he worked in Hawaii at the National Tropical Botanical Garden and at Missouri Botanical Garden, where he was Chairman of Indoor Horticulture and managed one of the largest orchid collections in the United States — more than 10,000 plants. Steve's greatest pleasure from orchids, though, has been growing them in his own home under lights and in windowsills, which he has done now for more than 50 years.

Steve has a B.S. and M.S. in horticulture from Ohio State University and Cornell, respectively. He has had a long and rich career working as a professional horticulturist for premier botanical gardens in the United States and as an executive at top horticultural businesses including W. Atlee Burpee Company and White Flower Farm. Steve is sought out as a lecturer and has delivered hundreds of lectures throughout the country. His presentations are noted for his excellent photography, his knowledge of the subject, and his sense of humor. He has appeared on various national TV shows and writes extensively, authoring many articles for horticultural trade and consumer magazines. He has written several books including *Gardening Basics For Dummies*, *Miniature Orchids*, *Fragrant Orchids*, *Moth Orchids, The Complete Guide to Phalaenopsis* and *Complete Guide to Orchids* (Miracle- Gro).

Steve now resides in the beautiful mountains of Asheville, North Carolina.

The **National Gardening Association** (NGA), founded in 1972, is a national not-for-profit leader in plant-based education. Its mission is to promote home, school, and community gardening as a means to renew and sustain the essential connection between people, plants, and the environment. For more information on the National Gardening Association, visit its website at `https://garden.org`.

Dedication

To my late mother, Janet, and my late father, Samuel, who encouraged me to pursue in my life and work what I loved and believed in.

To my loving wife, Sascha, who shares my passions and tolerates my obsessions.

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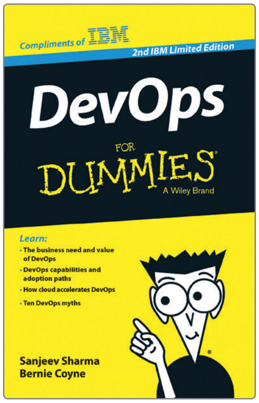
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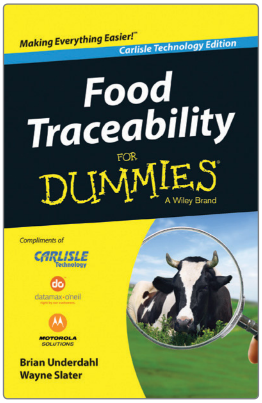
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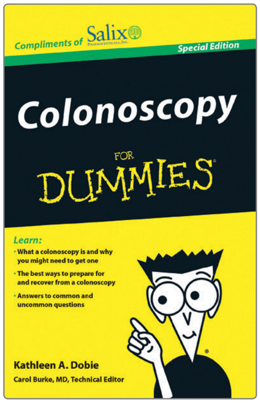
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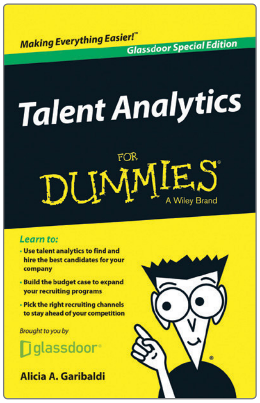
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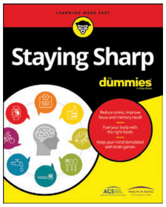
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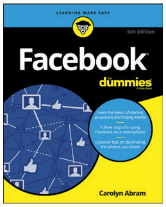
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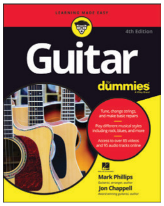
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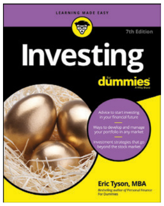
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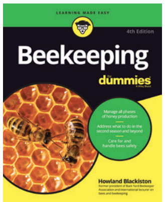
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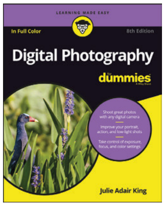
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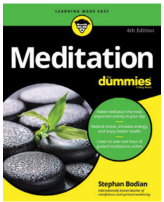
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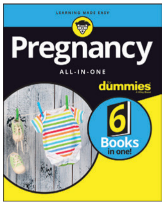
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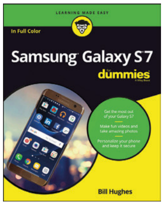
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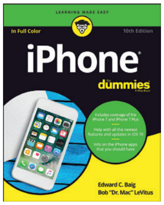
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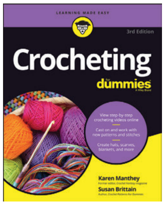
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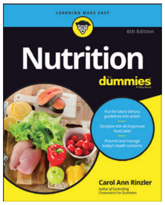
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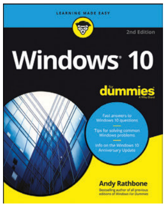
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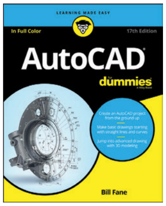
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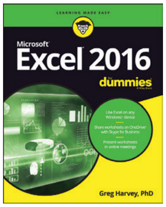
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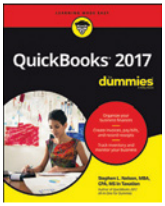
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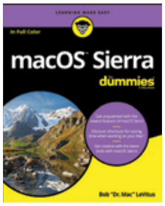
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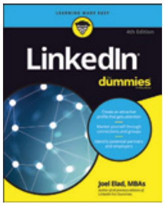
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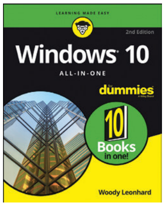
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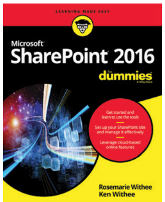
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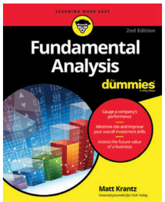
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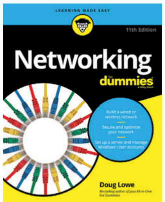
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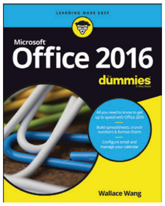
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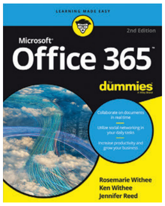
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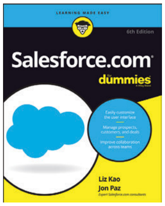
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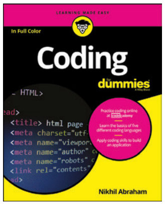
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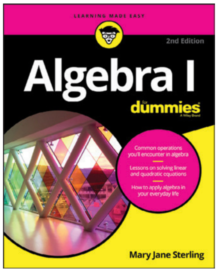

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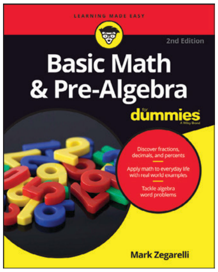

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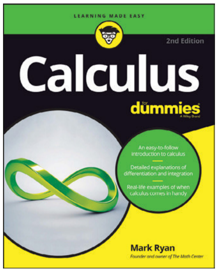

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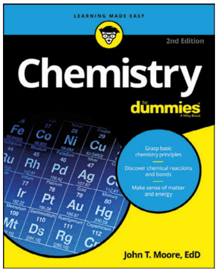

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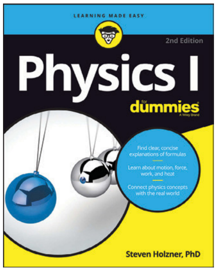

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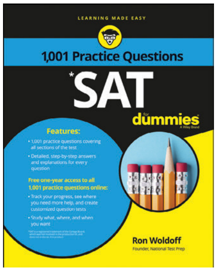

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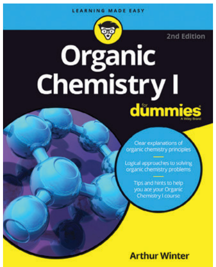

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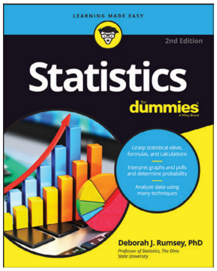

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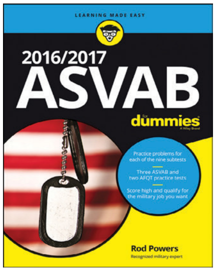

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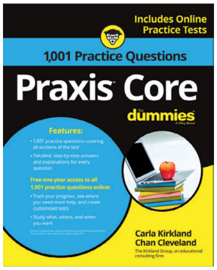

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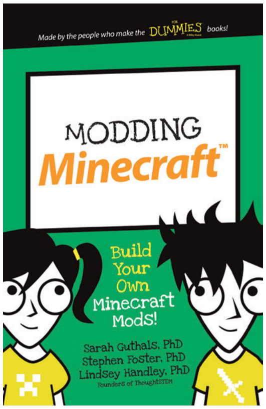
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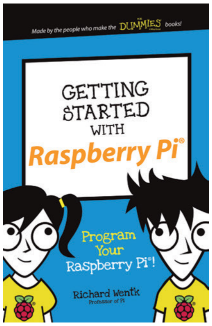
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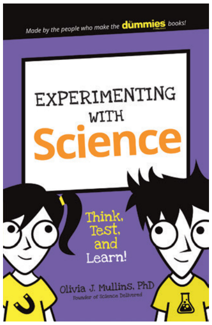
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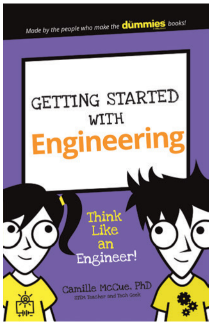
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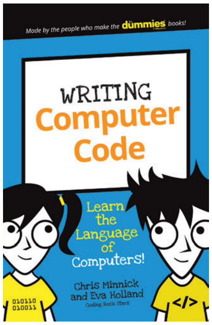
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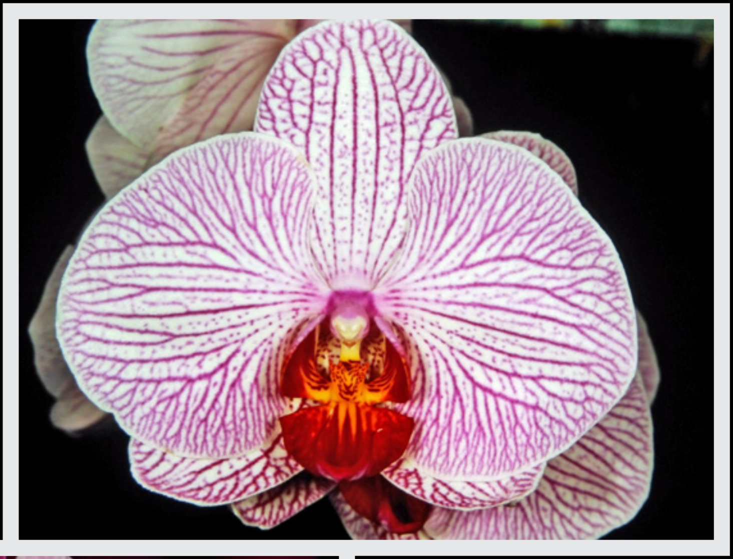

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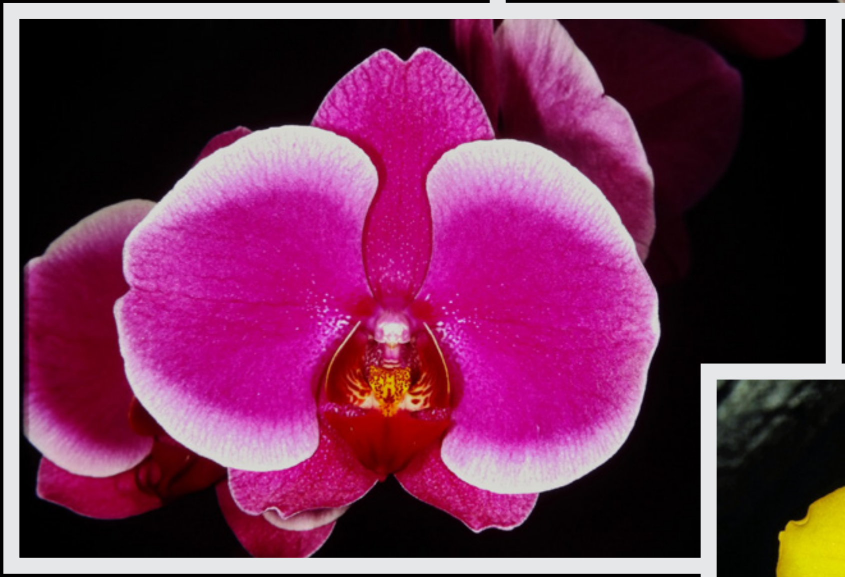
Phalaenopsis **Taisuco Chianfang**



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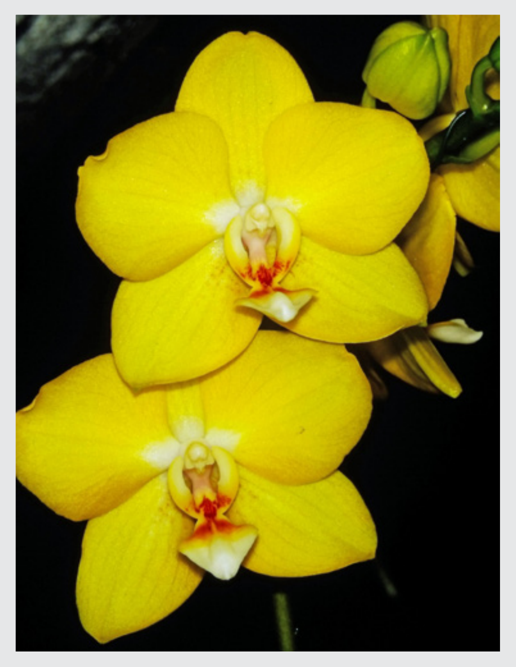

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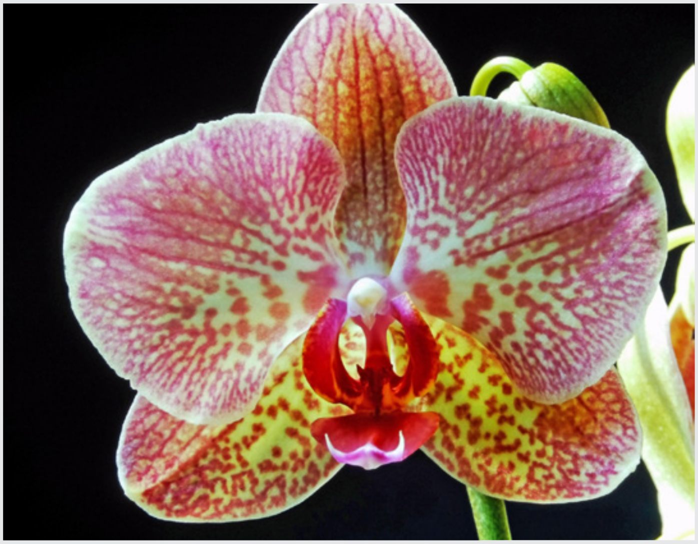
Phalaenopsis **Brother Lawrence 'Montclaire'**



Phalaenopsis Raymond Burr
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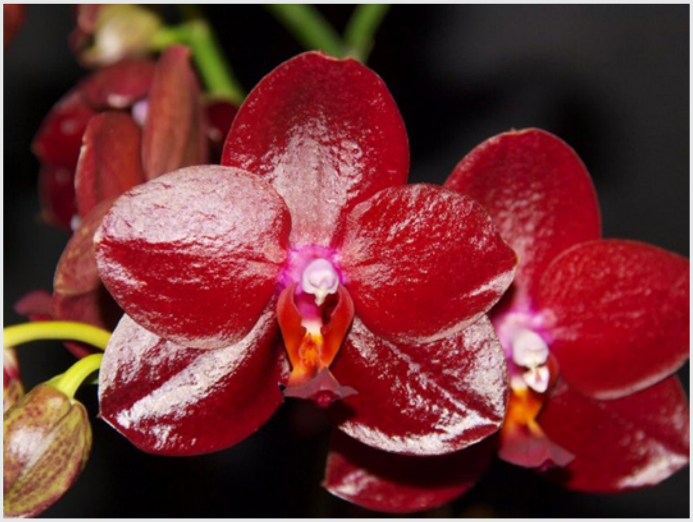

Phalaenopsis Sogo Grape
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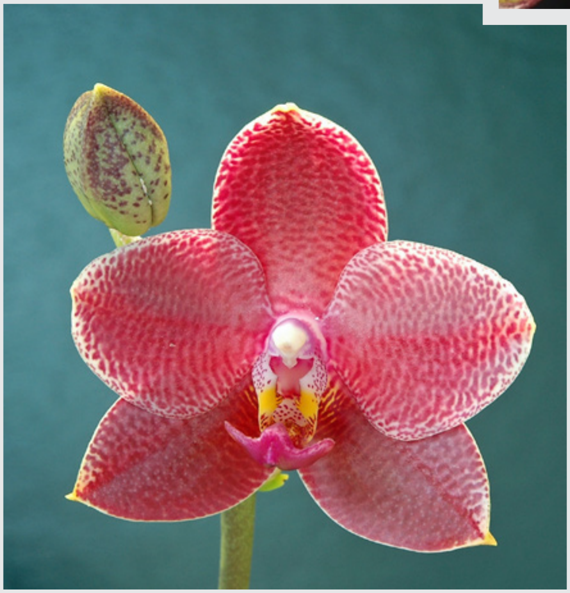

Phalaenopsis Pylo's Sofia
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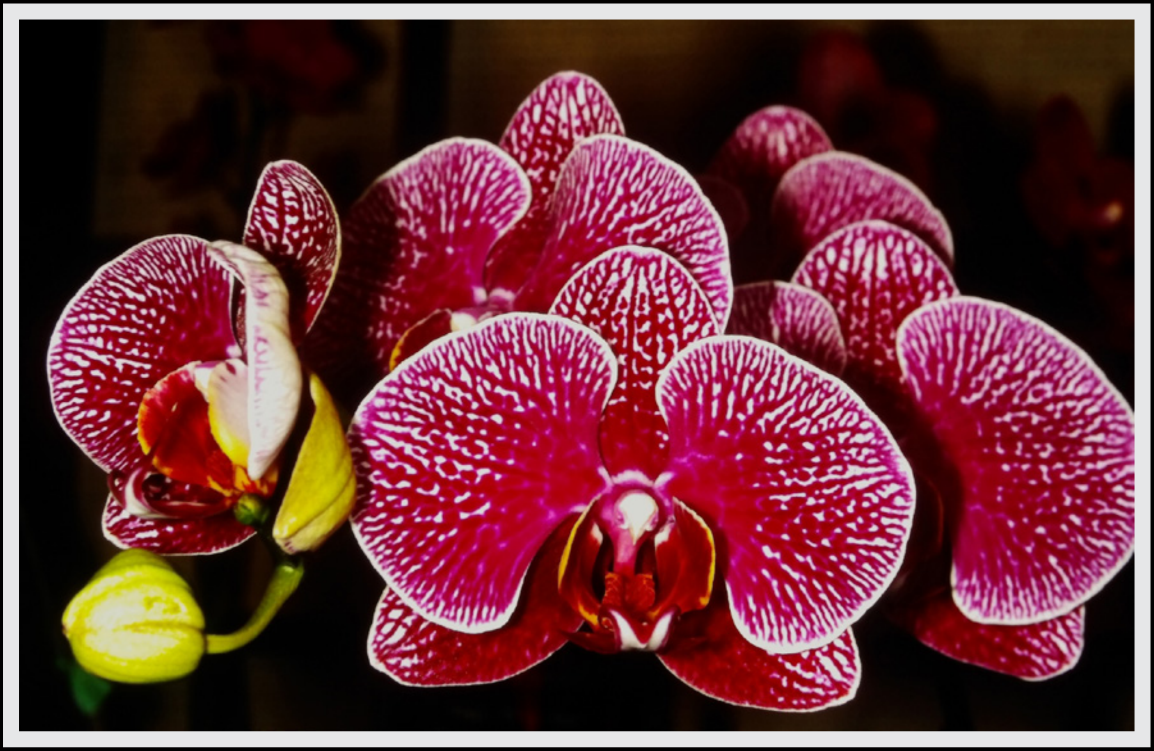

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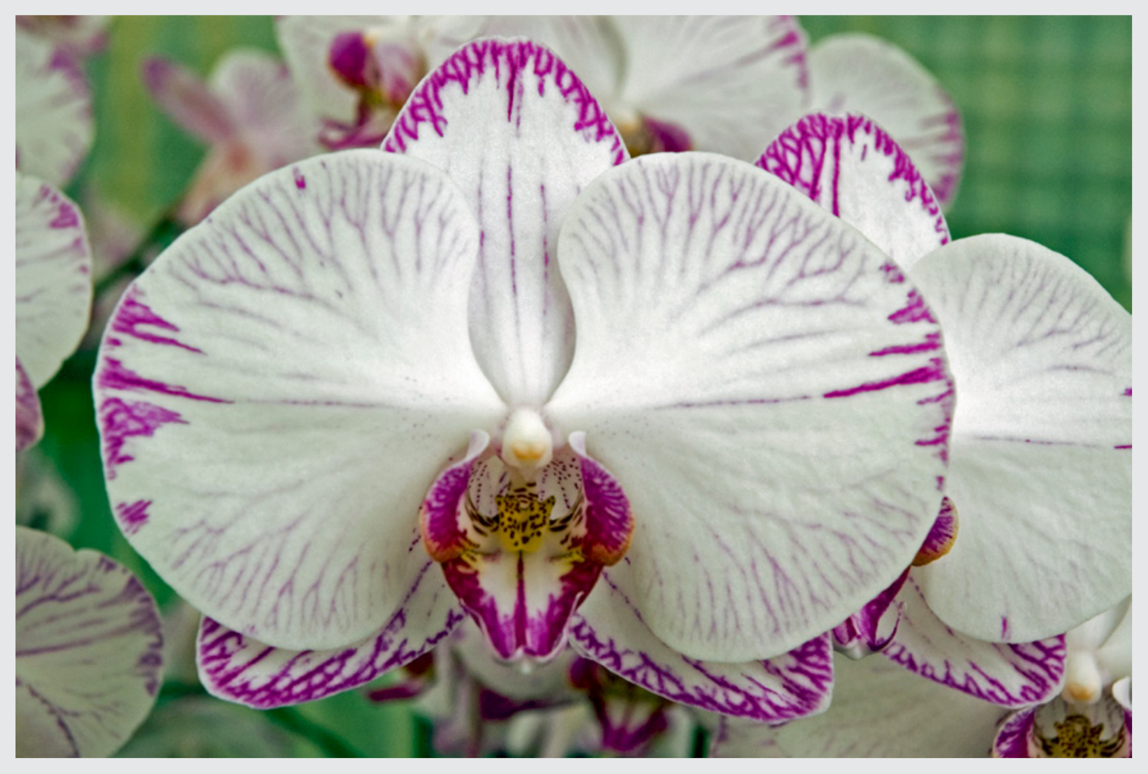

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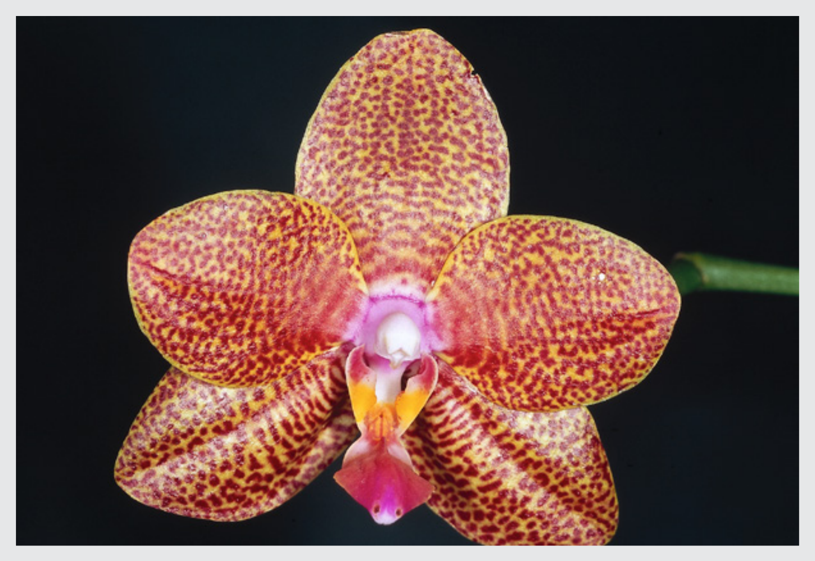

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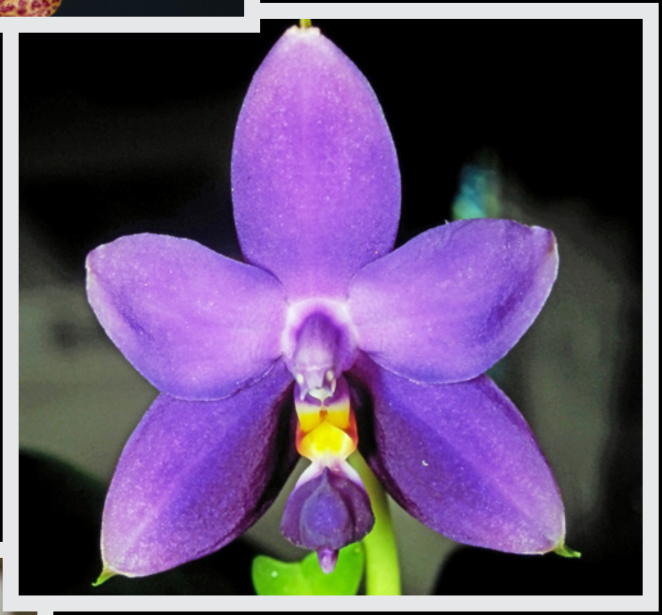
Phalaenopsis Ambo Buddha 'SW'



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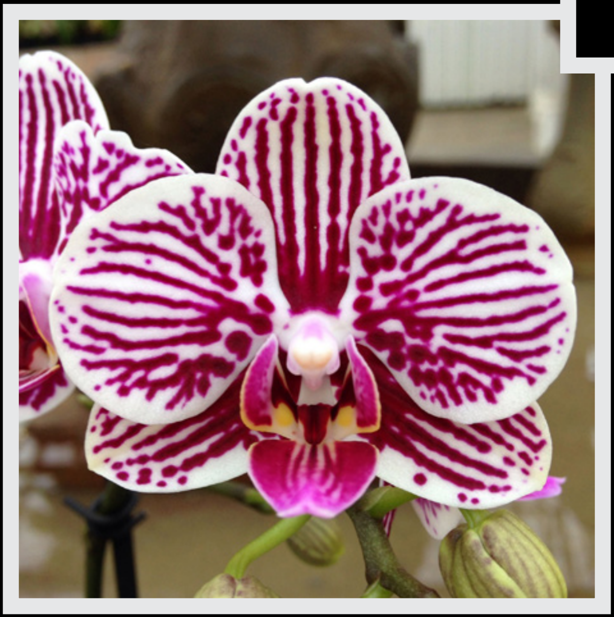

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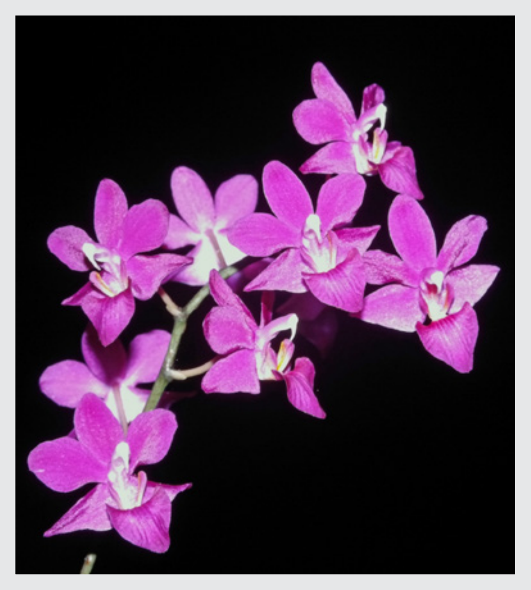

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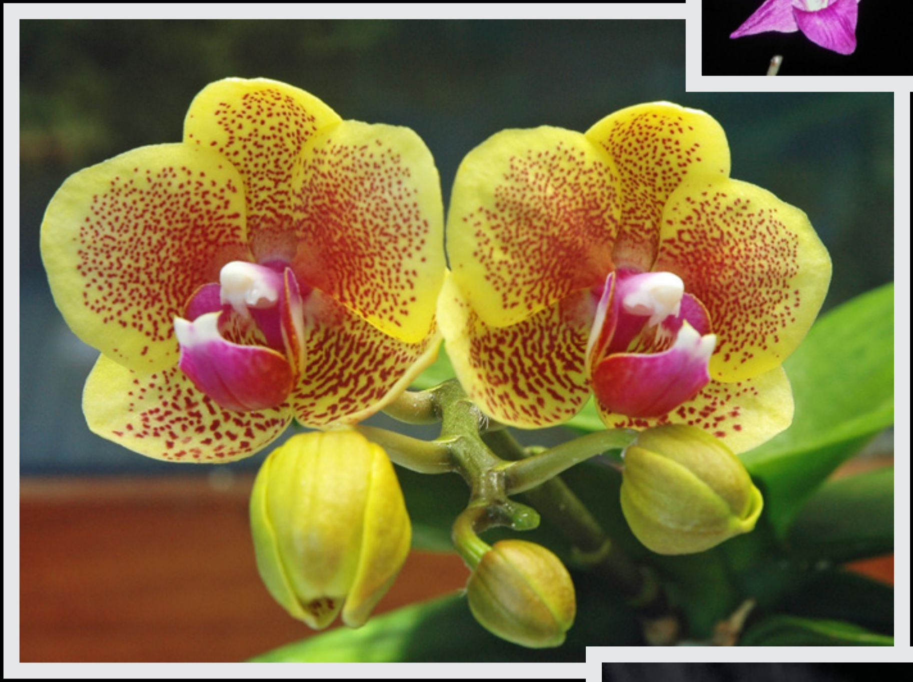
Phalaenopsis Purple Gem



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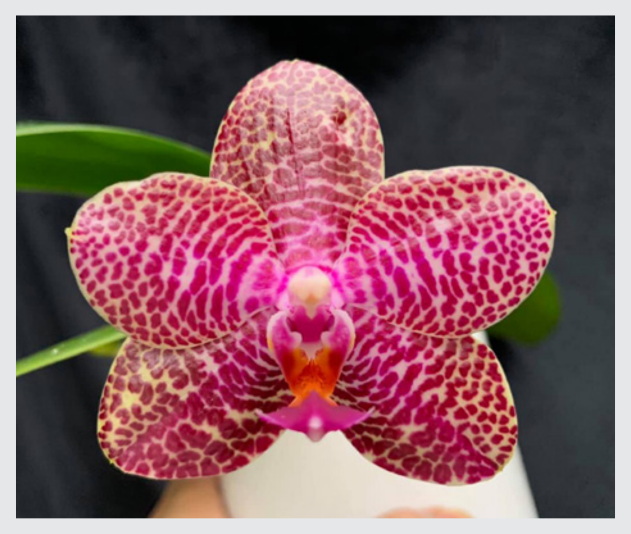

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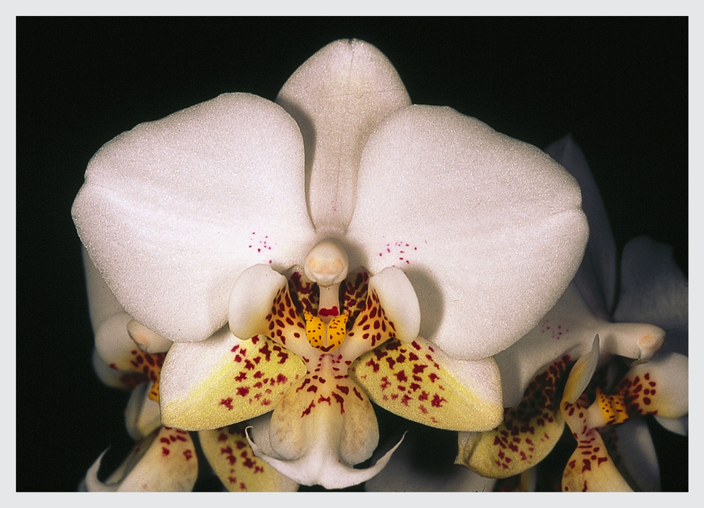
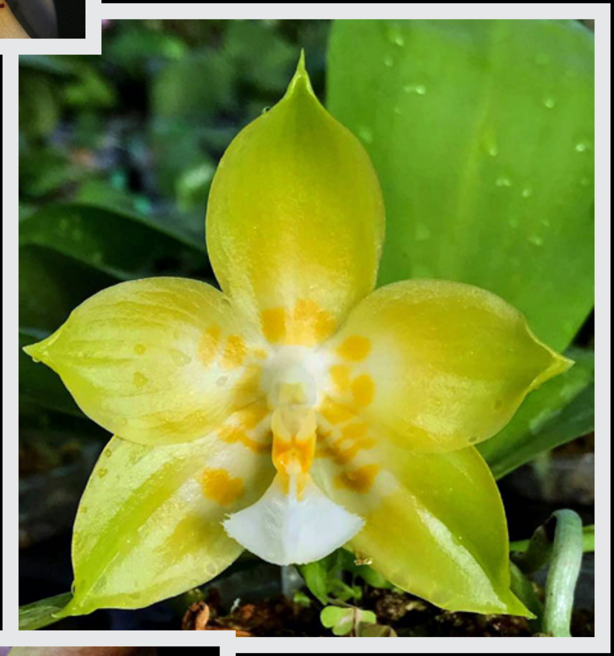
Mituo Gigan Dragon

Photo by Steven A. Frowine



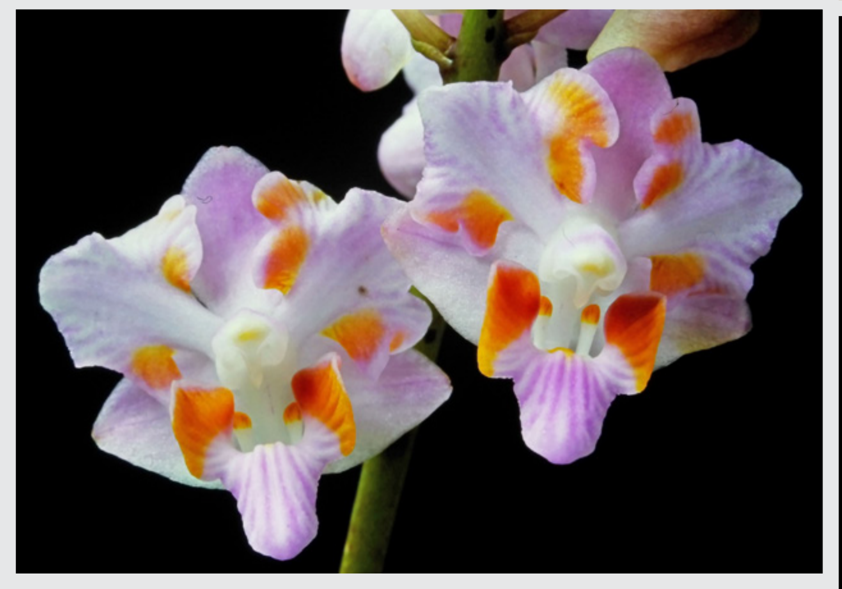
Phalaenopsis stuartiana

Photo by Steven A. Frowine



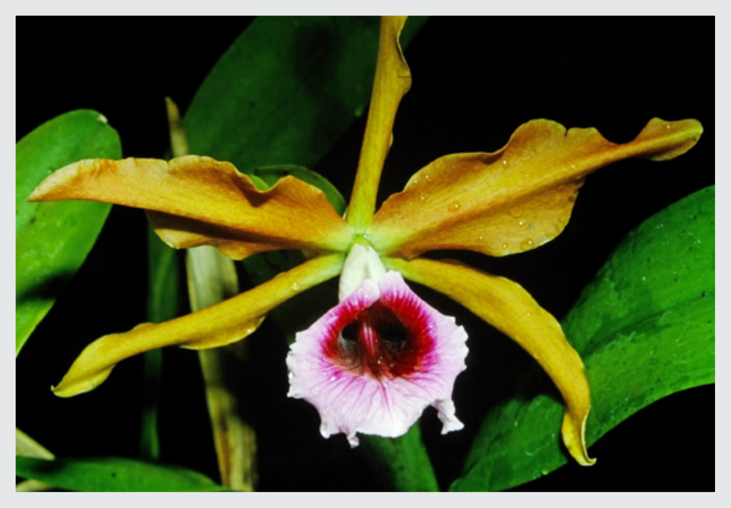
Phalaenopsis Golden Jade

Photo by Steven A. Frowine



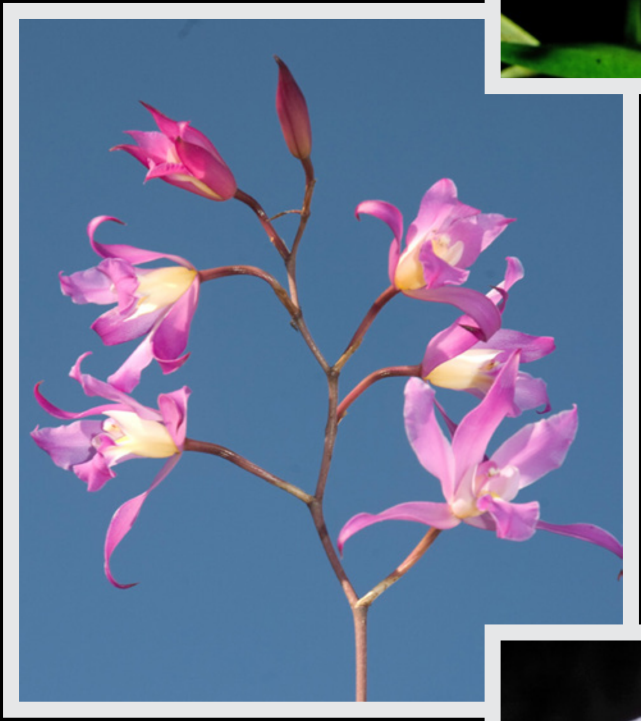
Phalaenopsis pulcherrima
var. *champornensis*

Cattleyas (see Chapter 11) display probably the most colorful flowers in the orchid world.



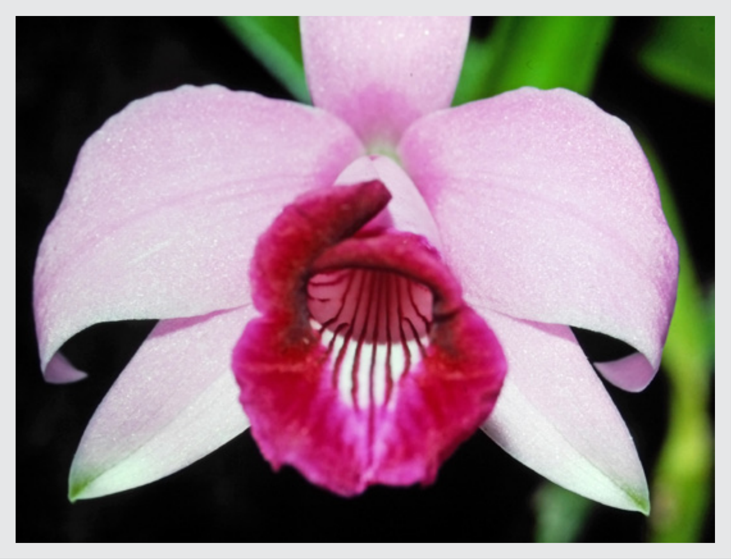
Cattleya tenebrosa

Photo by Steven A. Frowine



Laelia autumnalis

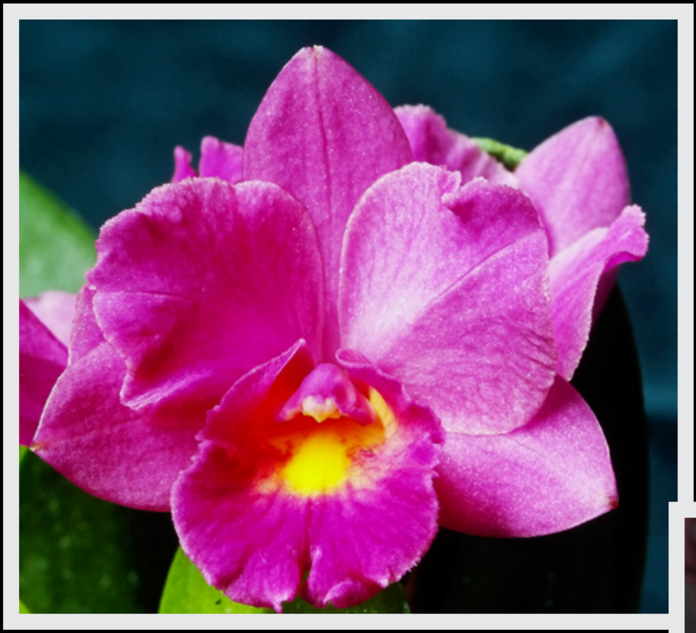
Photo by Steven A. Frowine



Cattleya bicalhoi

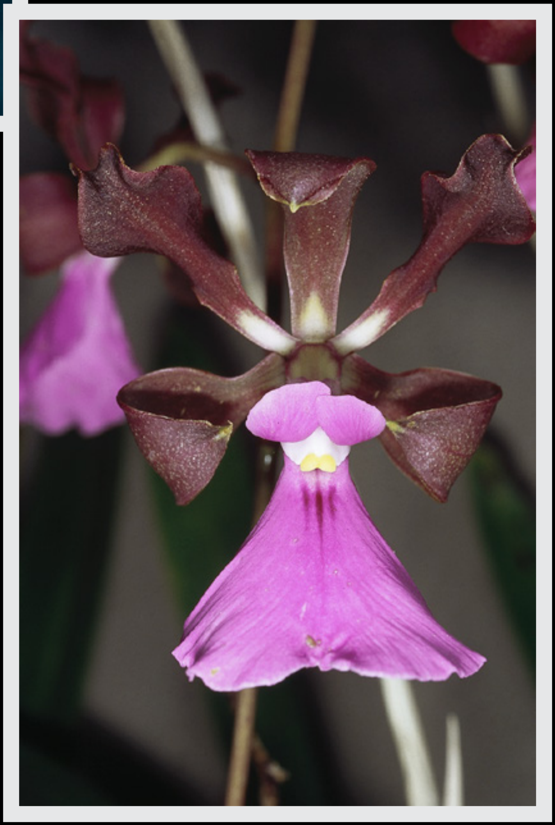
Photo by Steven A. Frowine

Photo by Steven A. Frowine



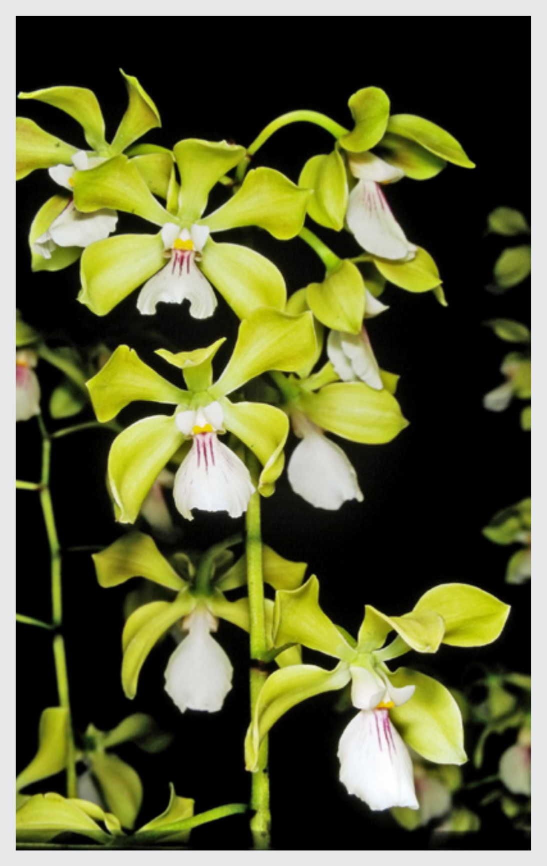
Cattleytonia Kat Golden Eye

Photo by Steven A. Frowine



Encyclia cordigera

Photo by Steven A. Frowine



Encyclia tampensis alba

Epidendrum Yoko Yokohama

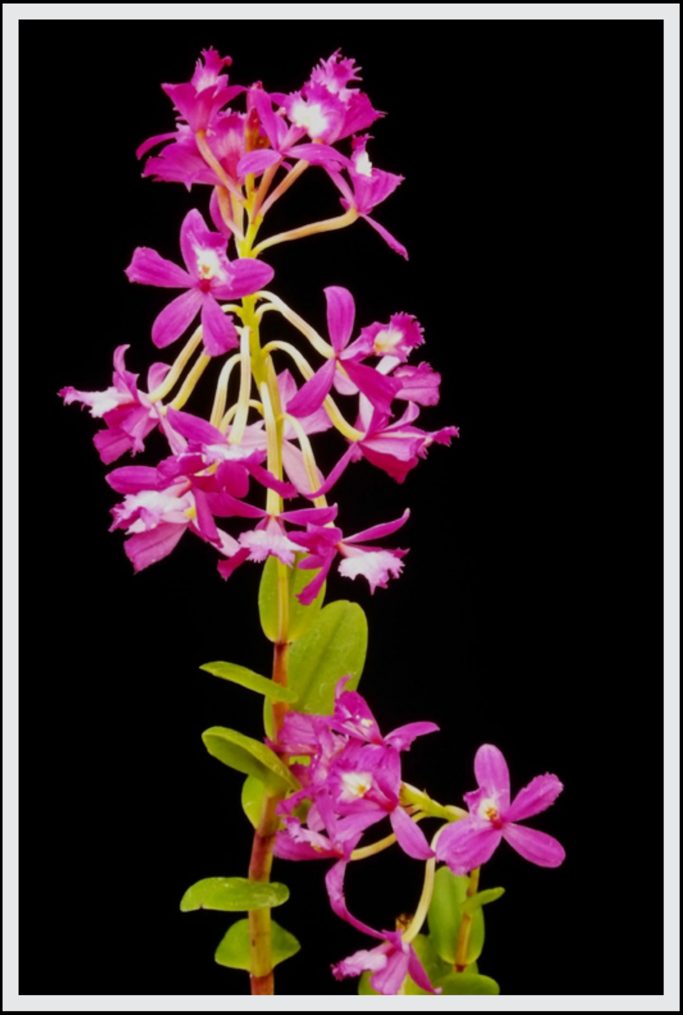


Photo by Steven A. Frowine

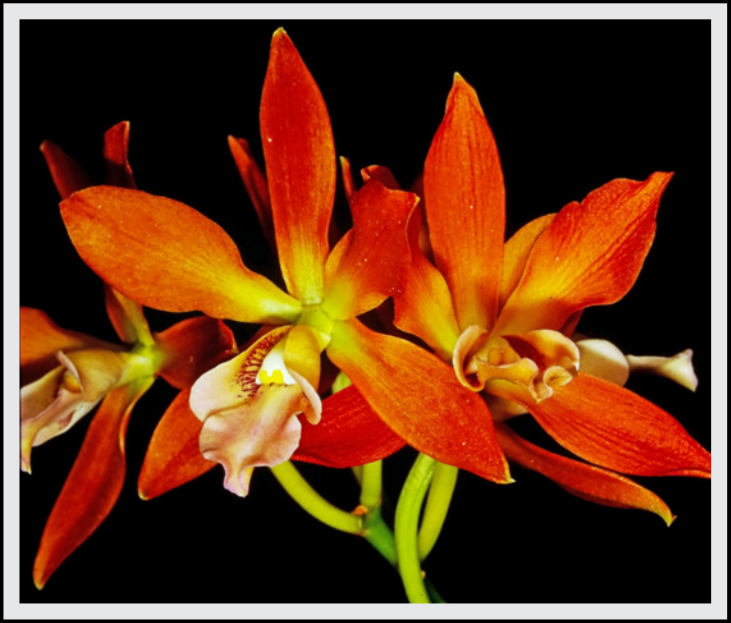


Photo by Steven A. Frowine

Guaricyclia Dora Tinschert 'Springdale'

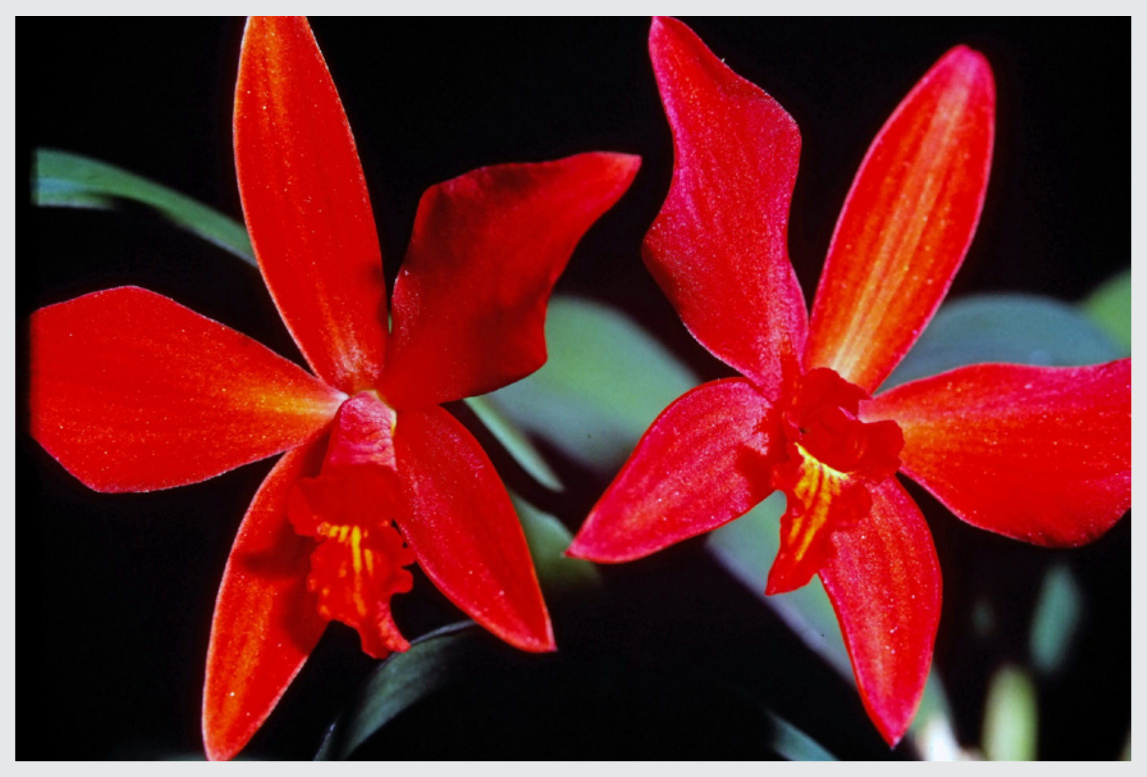


Photo by Steven A. Frowine

Cattleya Psyche 'Prolific'

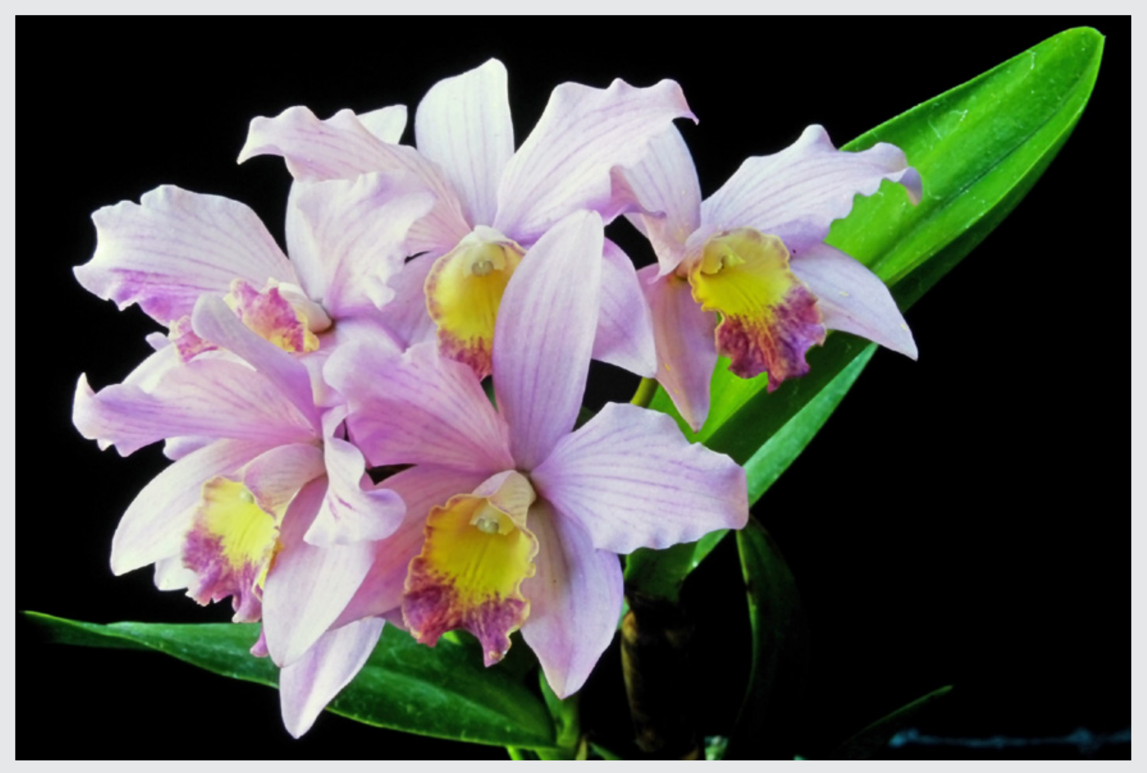
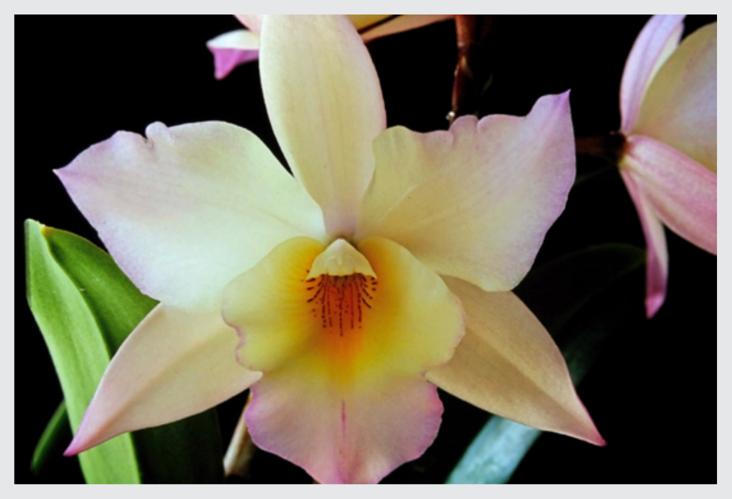


Photo by Steven A. Frowine

Cattlianthe Angel's Treasure 'Hawaii'

Jackfowlieara Appleblossom



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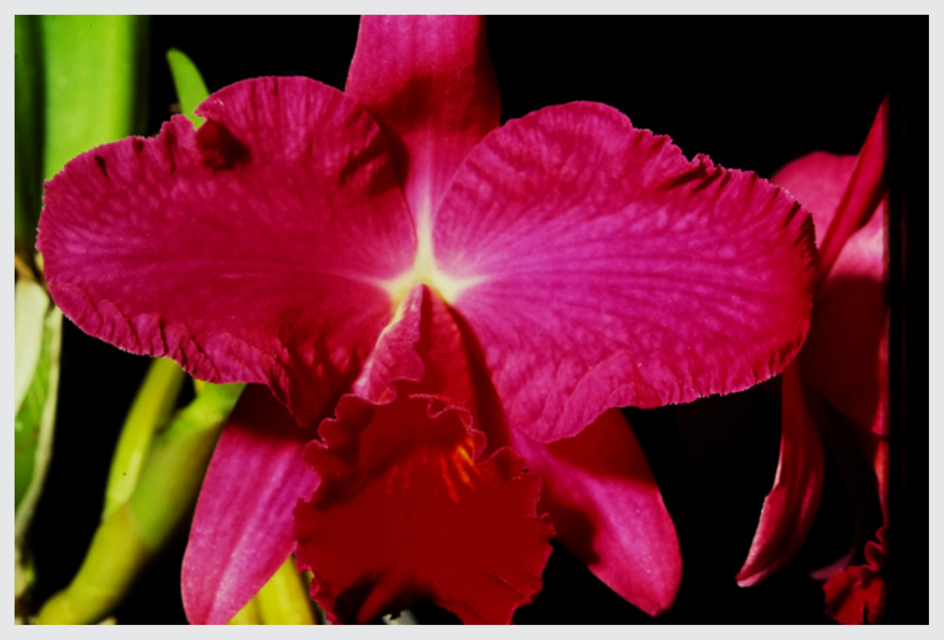


Photo by Steven A. Frowine

Cattleya Anzac

Rhyncholaeliocattleya Formosan Gold

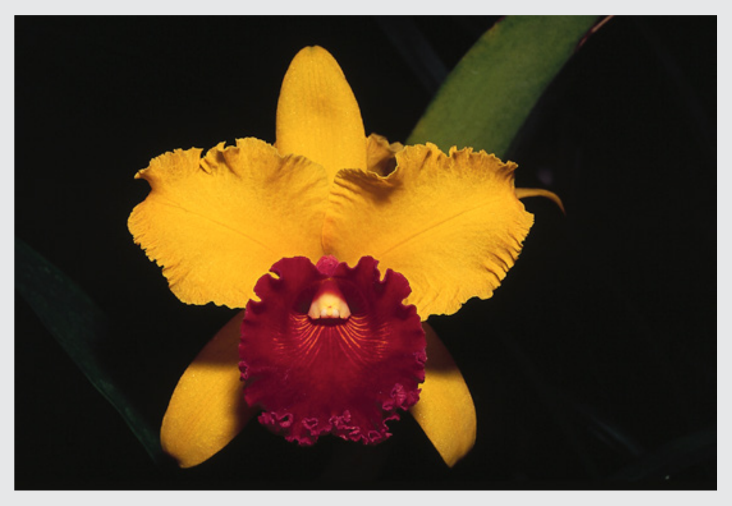
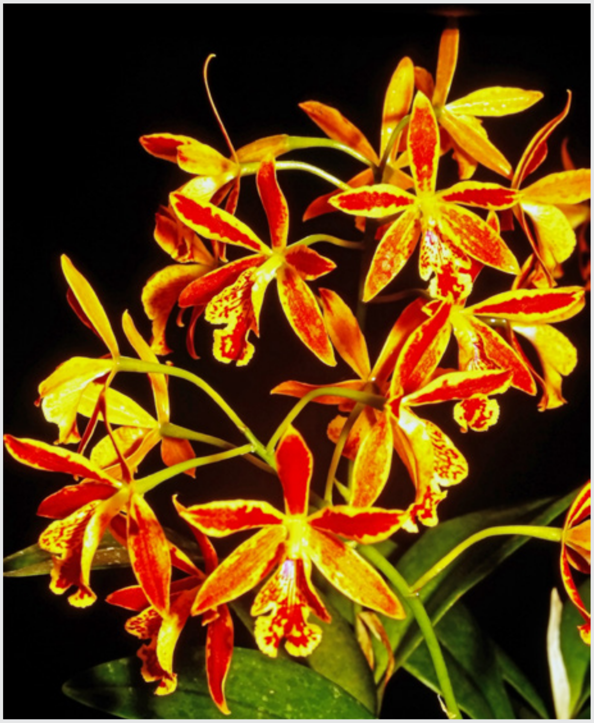


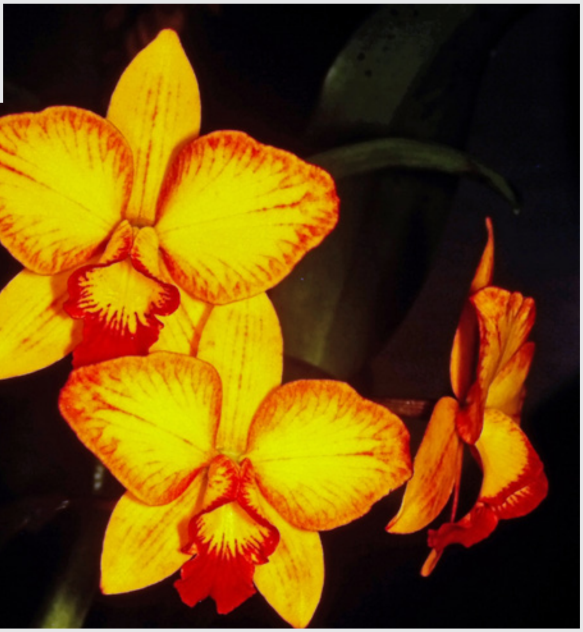
Photo by Steven A. Frowine

Photo by Steven A. Frowine



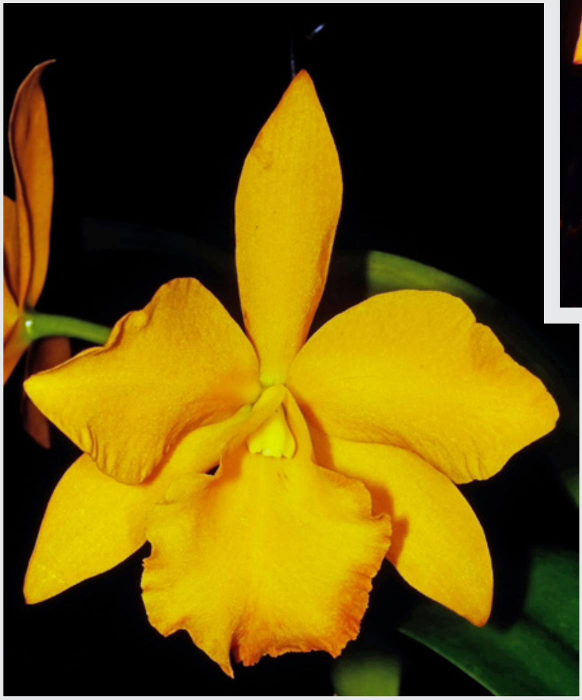
Cattlianthe Trick or Treat x
Epidendrum stamfordianum

Photo by Steven A. Frowine



Cattlianthe Sutter Creek

Photo by Steven A. Frowine



Rhyncattleanthe
Twentyfour Carat 'Lea'

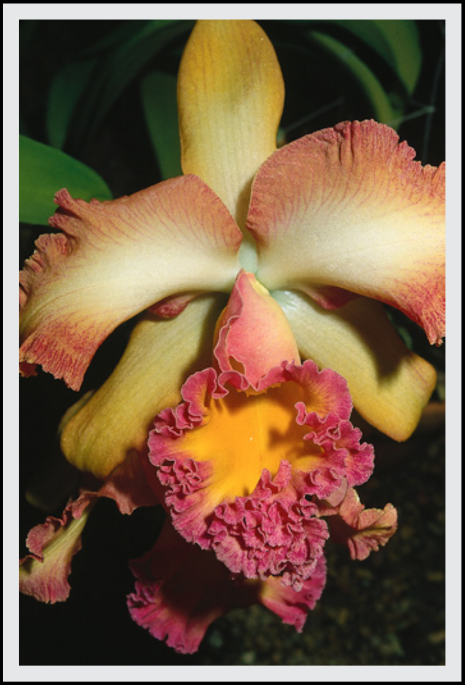


Photo by Steven A. Frowine

Rhyncholaeliocattleya
Harlequin 'Act II'

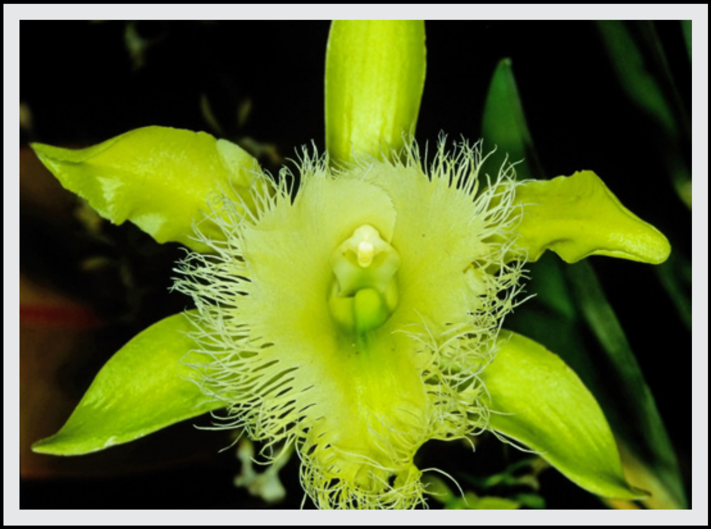


Photo by Steven A. Frowine

Rhyncholaelia digbyana

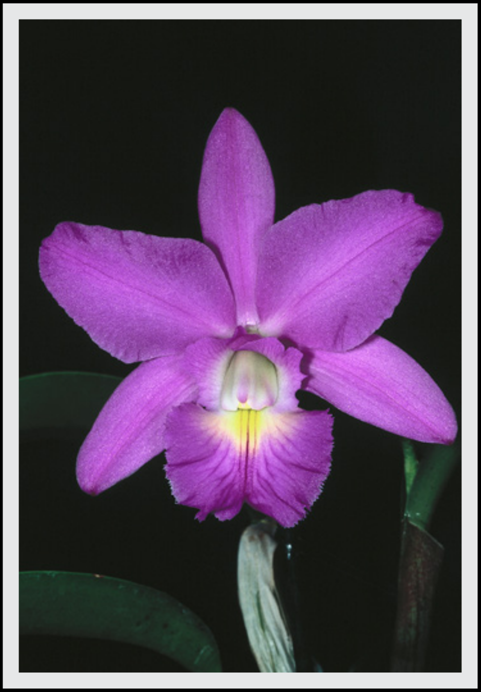


Photo by Steven A. Frowine

Rhyncholaeliocattleya
Cynthia 'Pink Lady'

Tropical lady's slipper orchids (see Chapter 12) are some of the best choices for growing indoors.

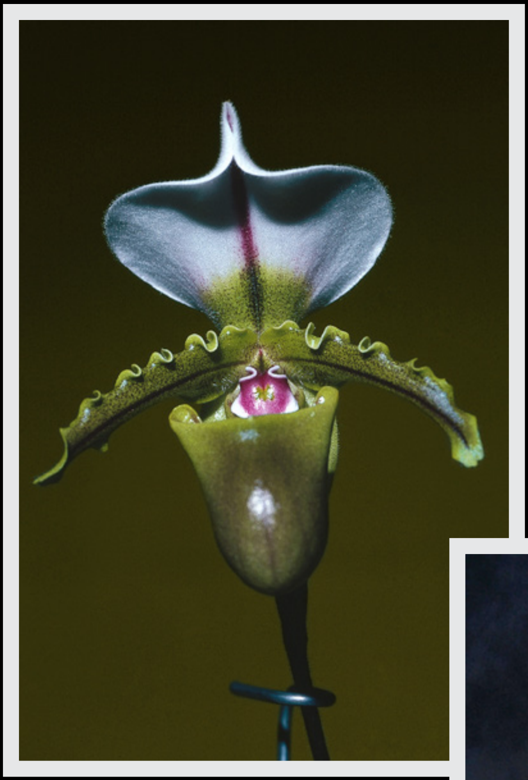


Photo by Steven A. Frowine

Paphiopedilum spicerianum

Photo by Steven A. Frowine

***Paphiopedilum* Yellow Butterfly**

Photo by Steven A. Frowine

***Paphiopedilum* Joyce Hasagawa**

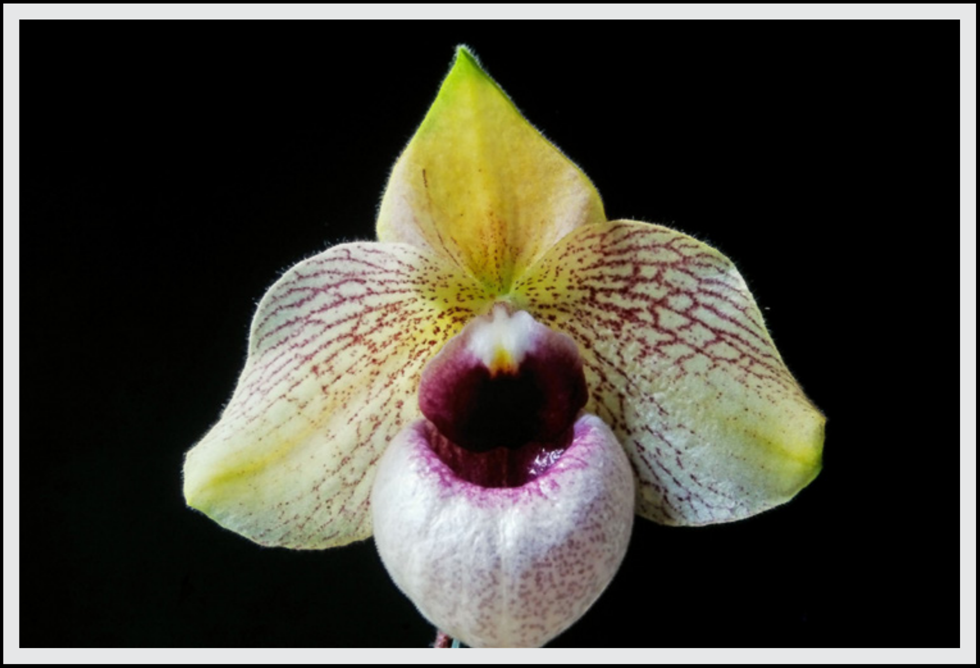


Photo by Steven A. Frowine

Paphiopedilum Lynleigh Koopowitz

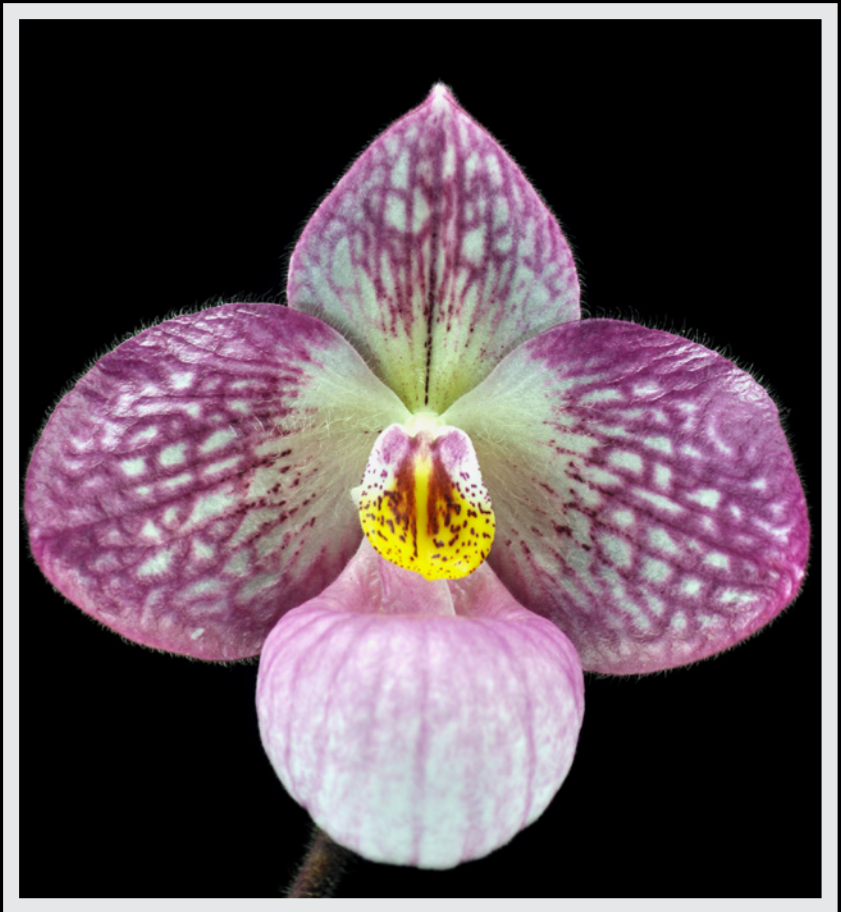
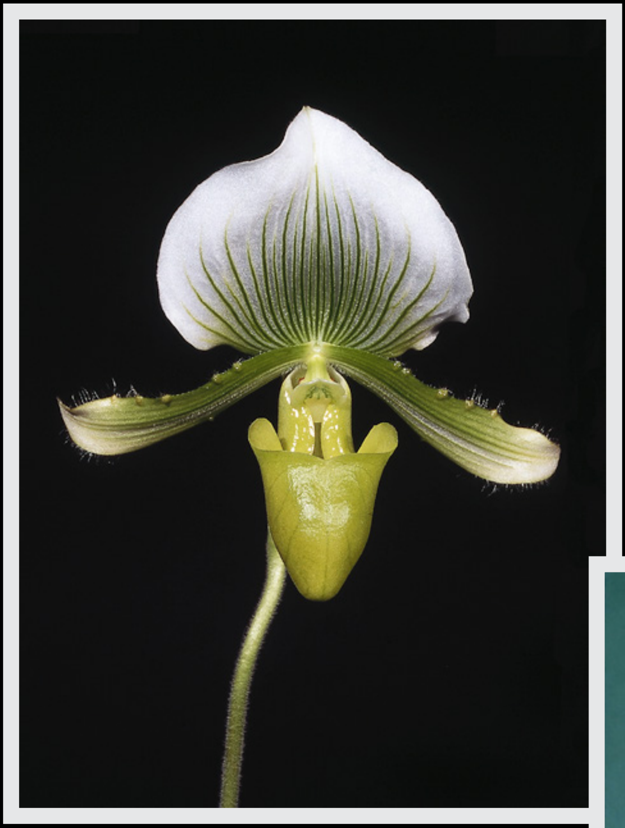


Photo by Steven A. Frowine

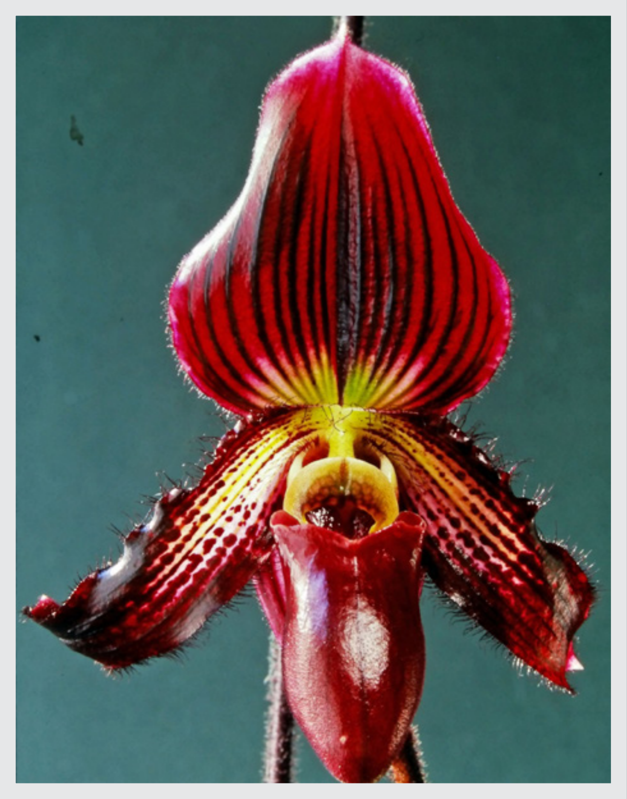
Paphiopedilum Magic Lantern

Photo by Steven A. Frowine



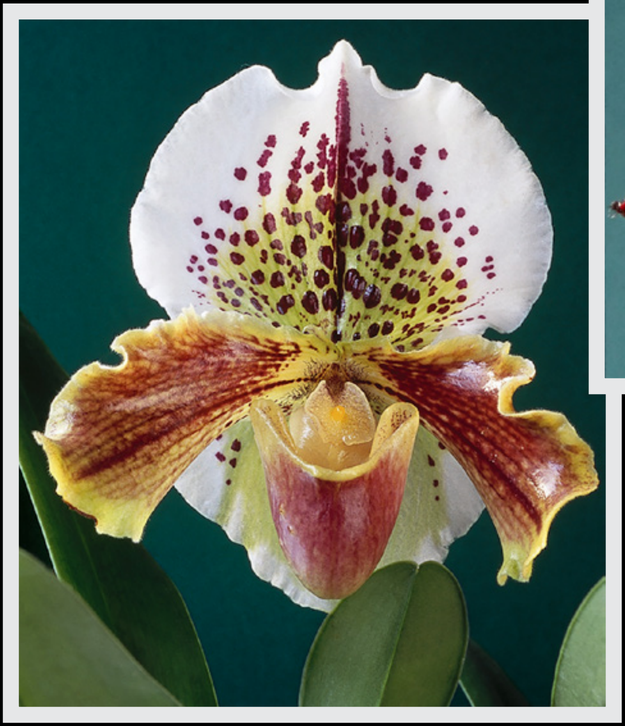
Paphiopedilum Maudiae
'The Queen' AM/AOS

Photo by Steven A. Frowine

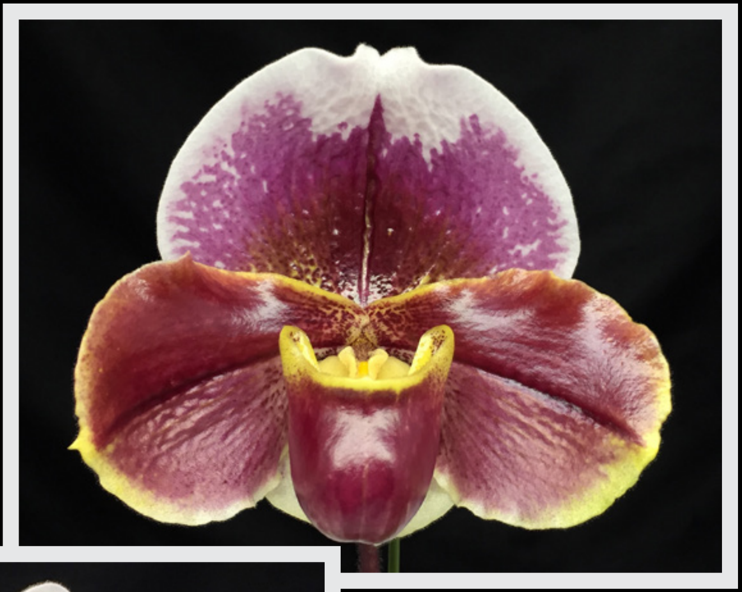


Paphiopedilum Hsinying Fairbre

Photo by Steven A. Frowine

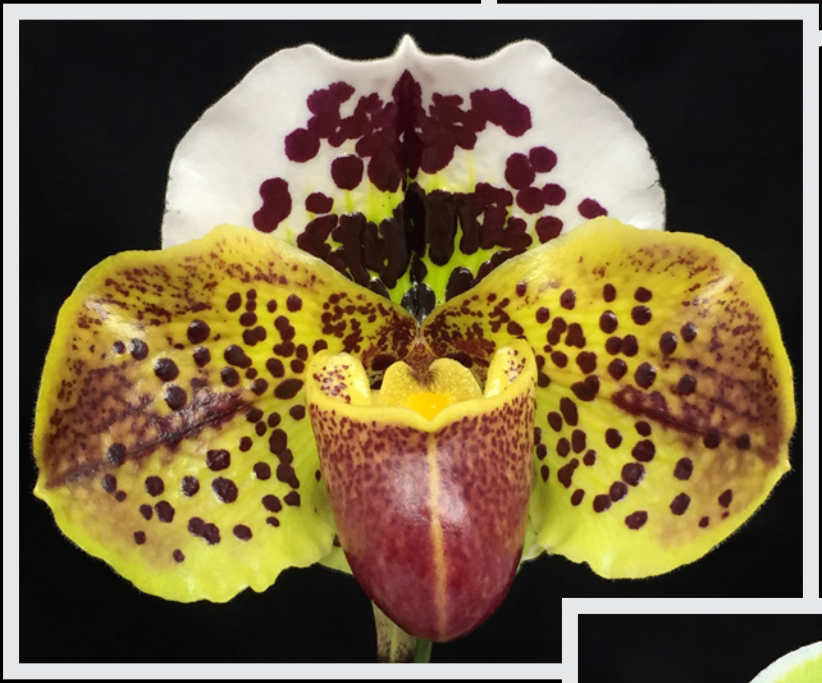


Paphiopedilum Langley Pride
'Burlingame' HCC/AOS



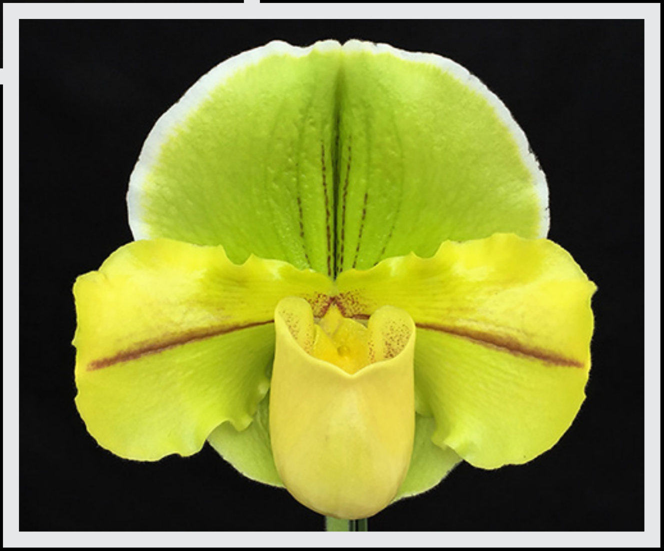
Paphiopedilum
Ruby Cabochon 'Deluxe'

Photo courtesy of Hillsview Gardens



***Paphiopedilum* Thunder Doll 'Palendrome'**

Photo courtesy of Hillsview Gardens



***Paphiopedlium* Olympic Emerald 'Sasquatch'**

Photo courtesy of Hillsview Gardens

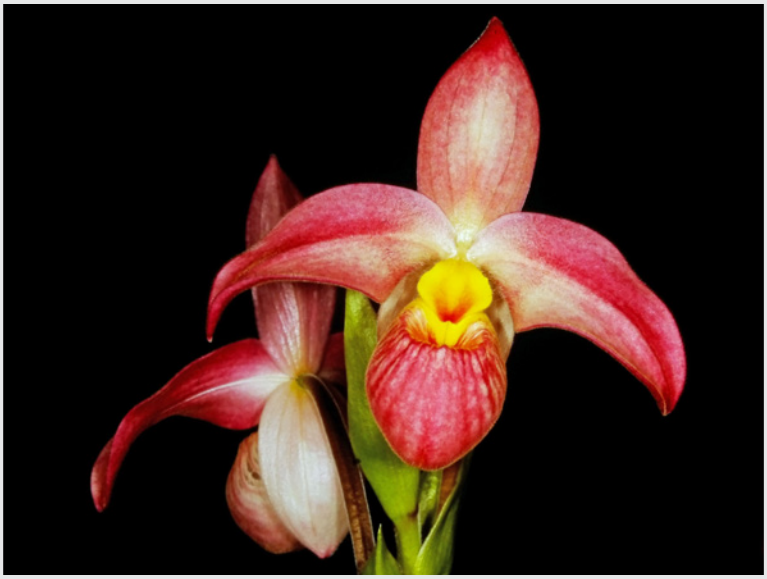


Photo by Steven A. Frowine

Phragmipedium Hanne Popow

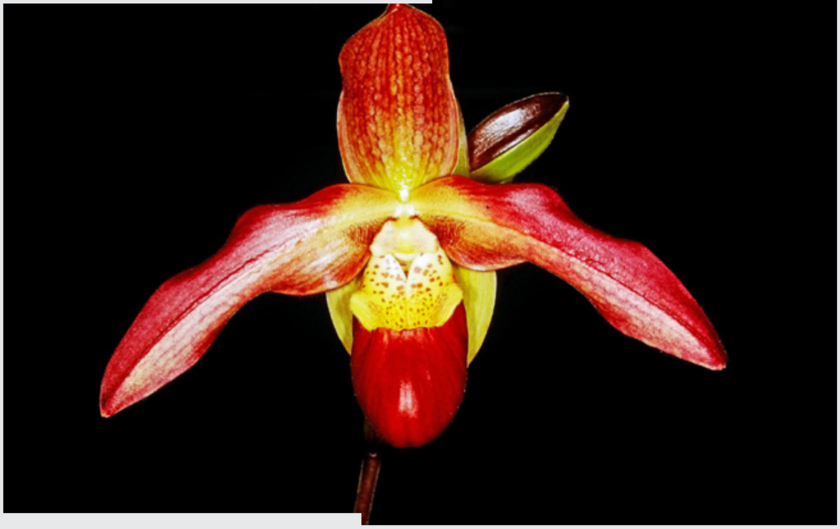


Photo by Steven A. Frowine

Phragmipedium Noirmont

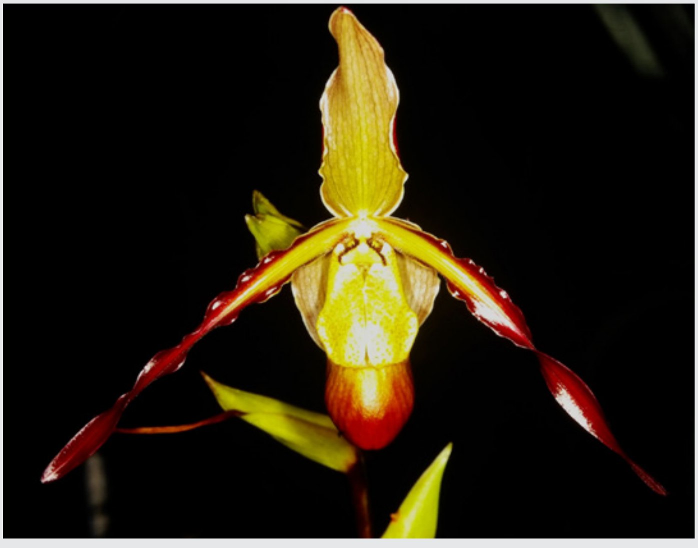


Photo by Steven A. Frowine

Phragmipedium Sorcerer's Apprentice

Oncidiums (refer to Chapter 13) offer a huge range of colorful flower types.

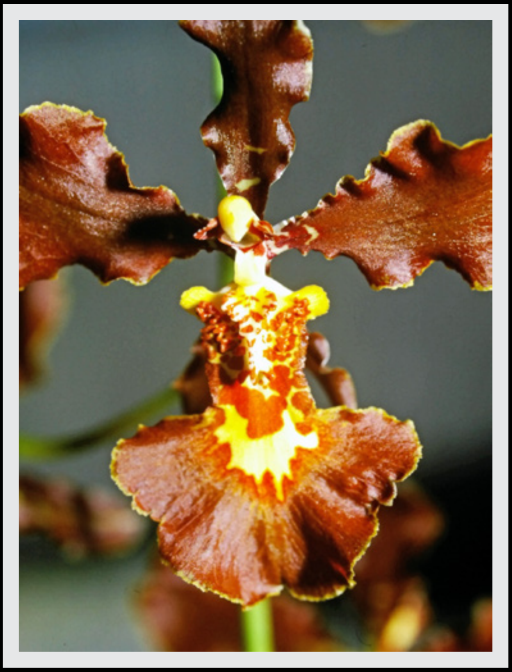


PHOTO BY STEVEN A. FROWINE

Gomesa imperatoris-maximiliani

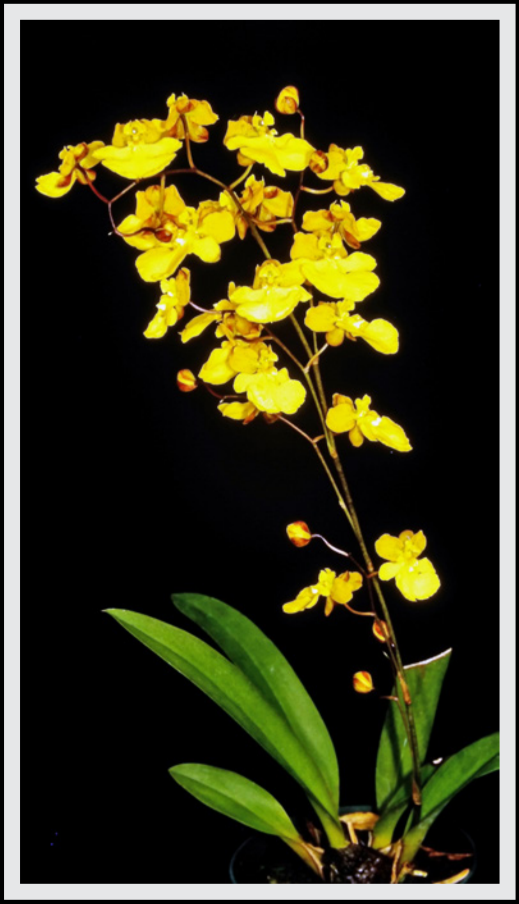


PHOTO BY STEVEN A. FROWINE

***Zelenkocidium* Kukoo**

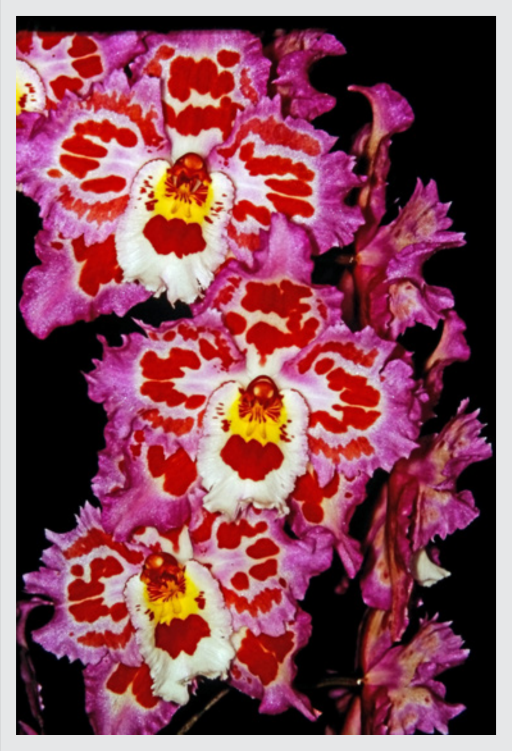


PHOTO BY STEVEN A. FROWINE

***Oncidium* Fort Point**

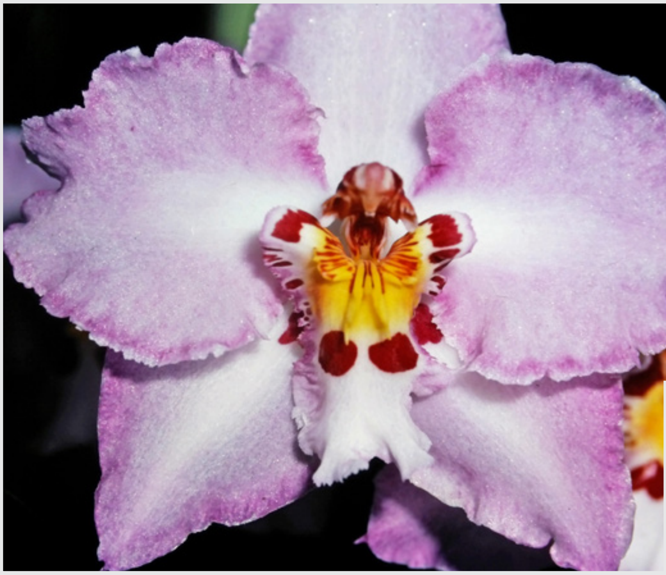


Photo by Steven A. Frowine

Oncidium Matanda

Oncidium wyattianum

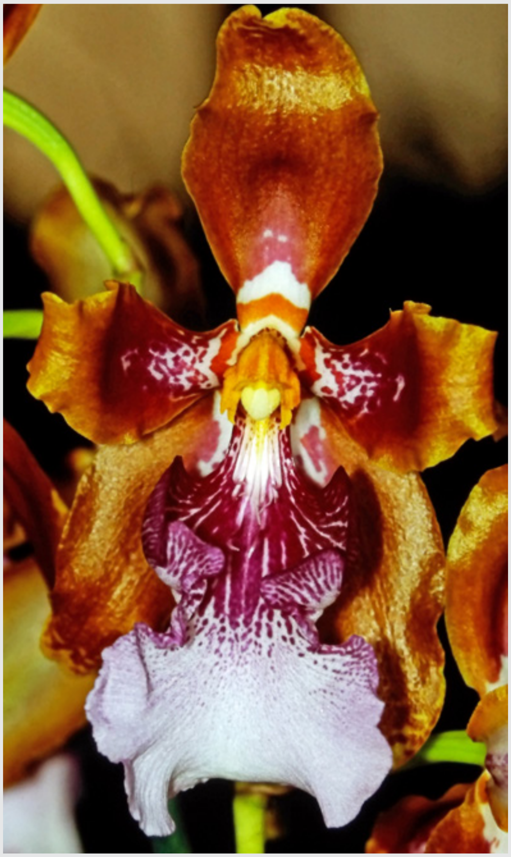


Photo by Steven A. Frowine

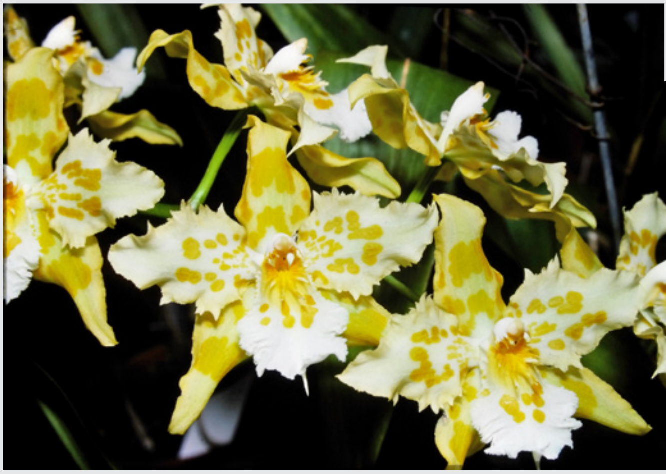
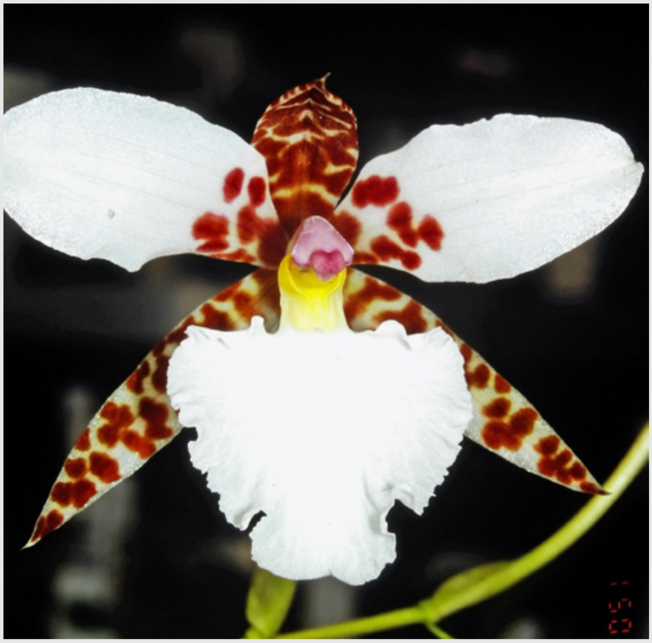


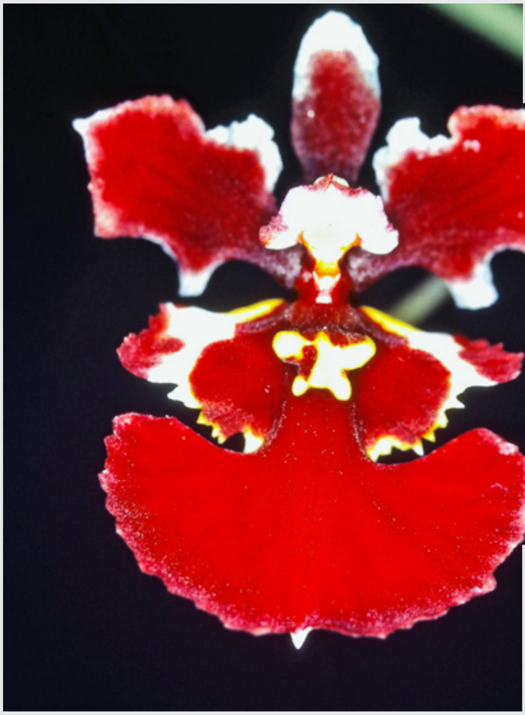
Photo by Steven A. Frowine

Oncidium Hallio-Crispum



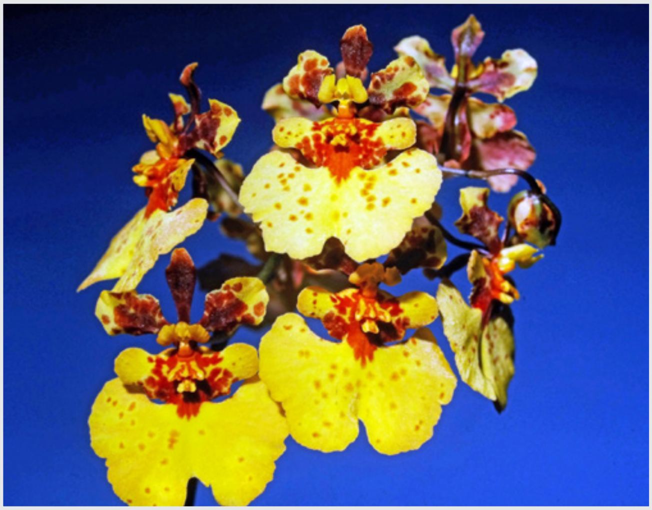
Rhynchostele rossii

Photo by Steven A. Frowine



***Tolumnia* Potpourri ‘Scarlet’**

Photo by Steven A. Frowine



***Tolumnia* Savanna**
La Mar ‘Golden Galaxy’

Photo by Steven A. Frowine

The flowers of miltonias/miltoniopsis look like beautifully marked pansies. Chapter 13 discusses these types of orchids.

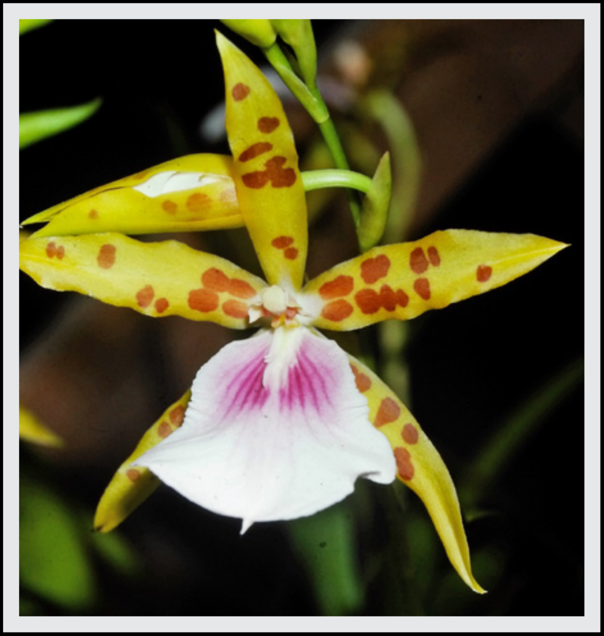


Photo by Steven A. Frowine

Miltonia Goodale Moir 'Golden Wonder'

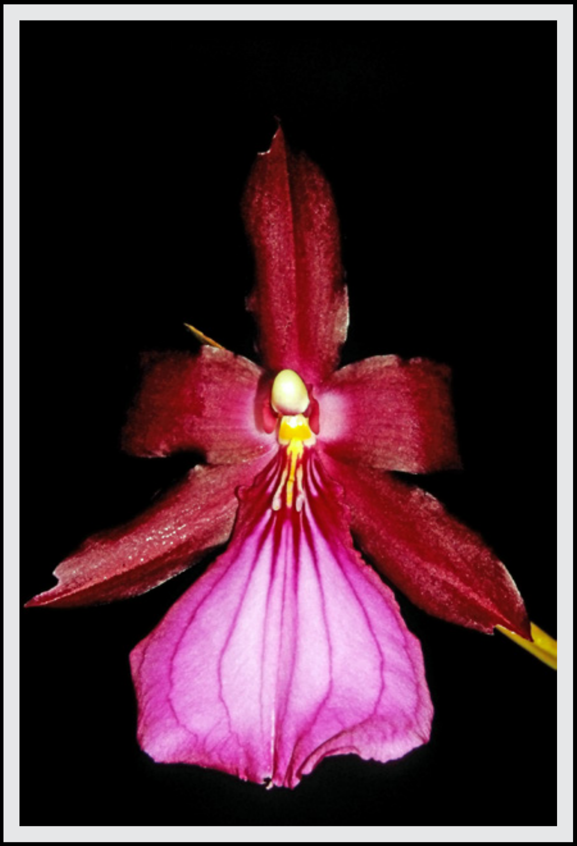


Photo by Steven A. Frowine

Miltonia moreliana

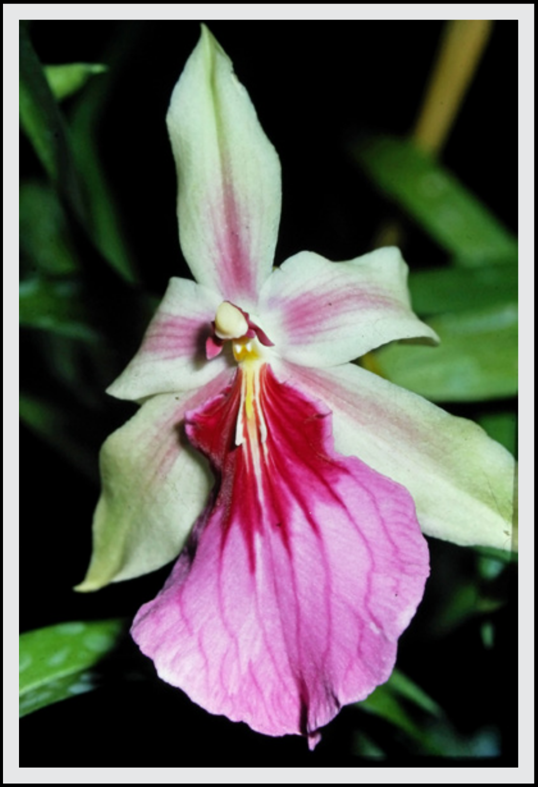


Photo by Steven A. Frowine

Miltonia spectabilis

Miltonia **Venus**

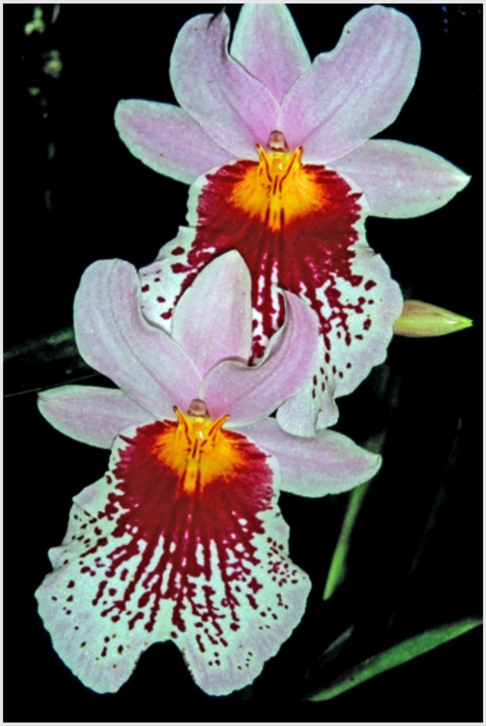


Photo by Steven A. Frowine

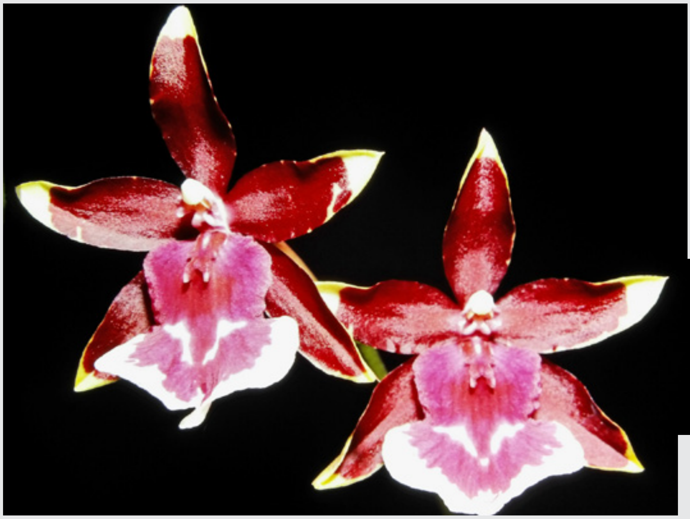


Photo by Steven A. Frowine

Miltonidium **Dan Inouye**

Miltoniopsis **Hajime Ono**

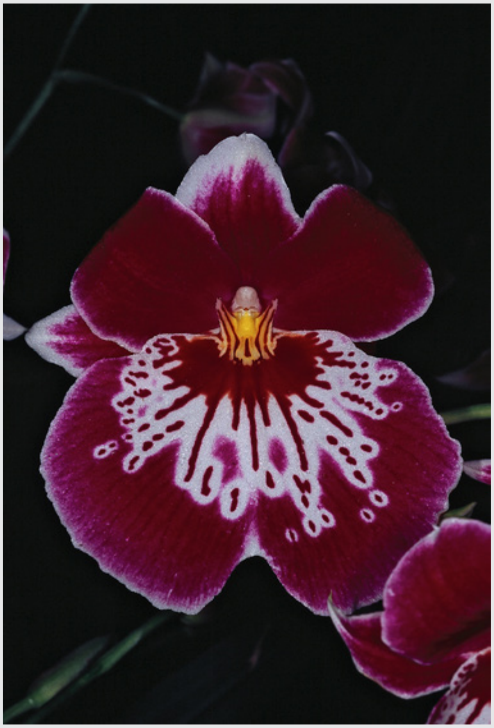
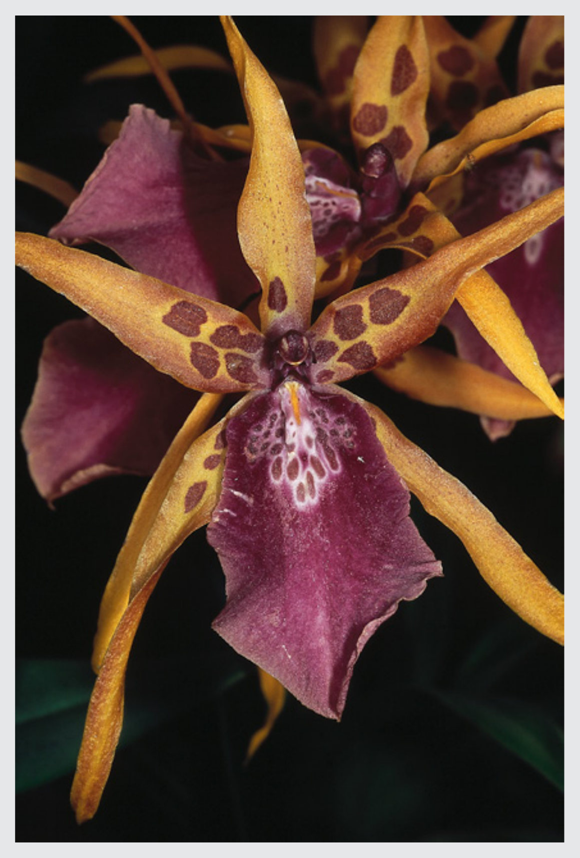


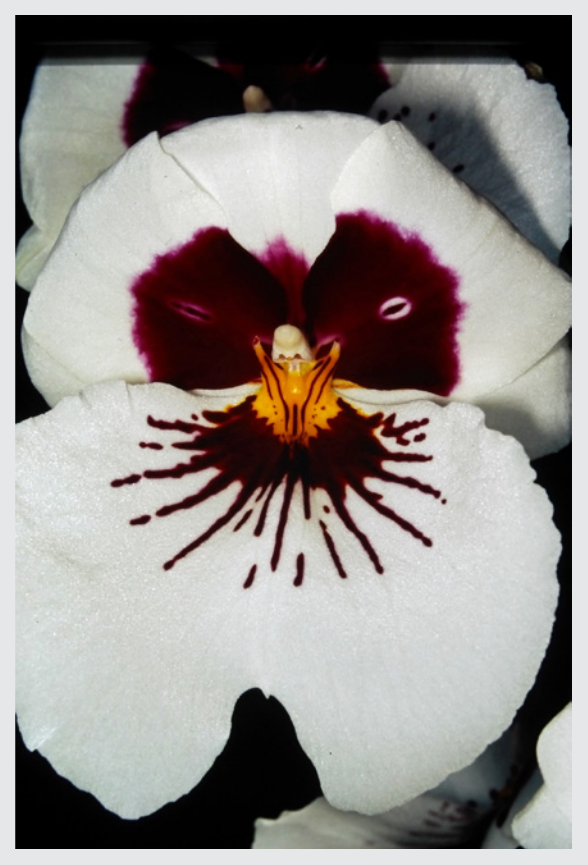
Photo by Steven A. Frowine

Photo by Steven A. Frowine



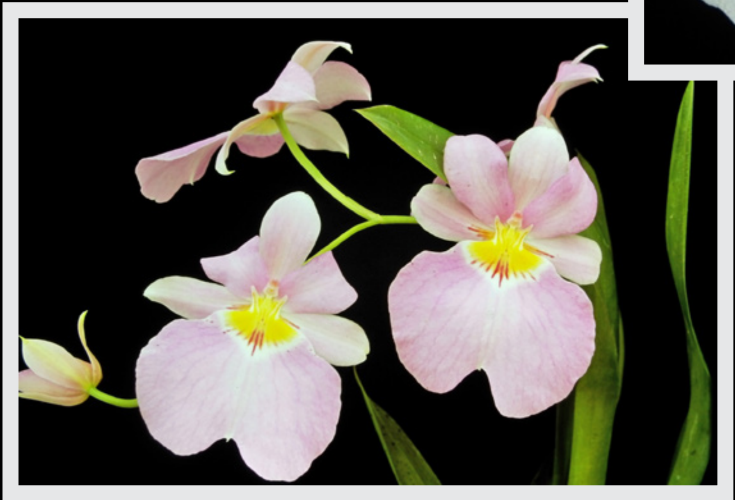
Bratonia Memoria Donald Christian

Photo by Steven A. Frowine

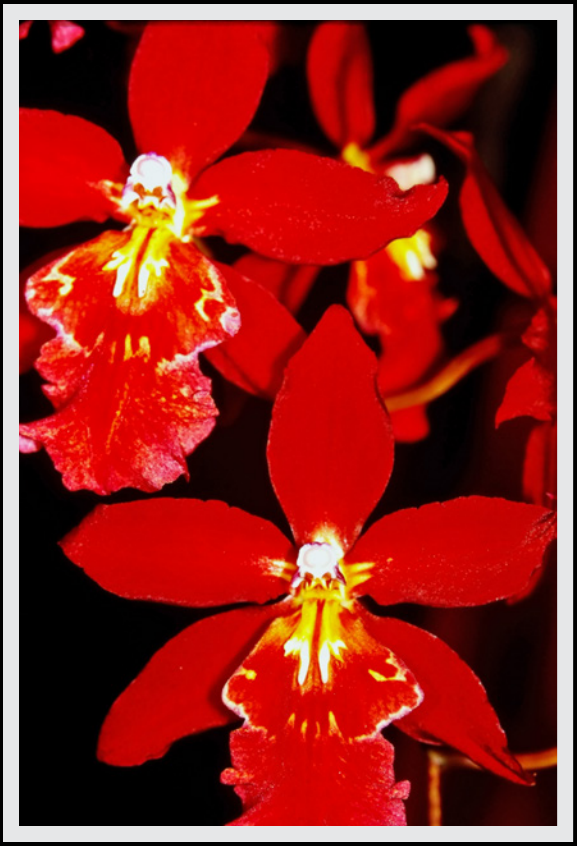


Miltoniopsis *Maui Pearl*

Photo by Steven A. Frowine

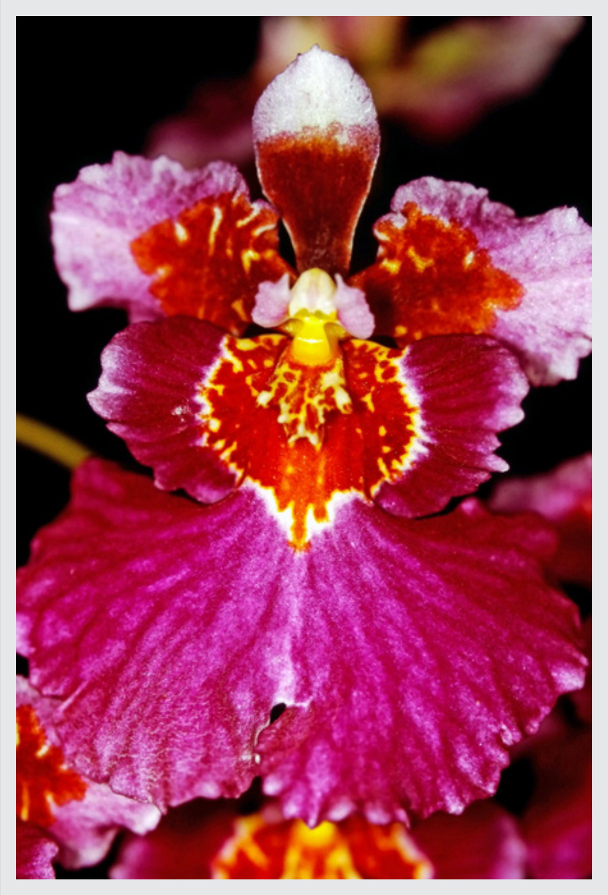


Miltoniopsis vexillaria



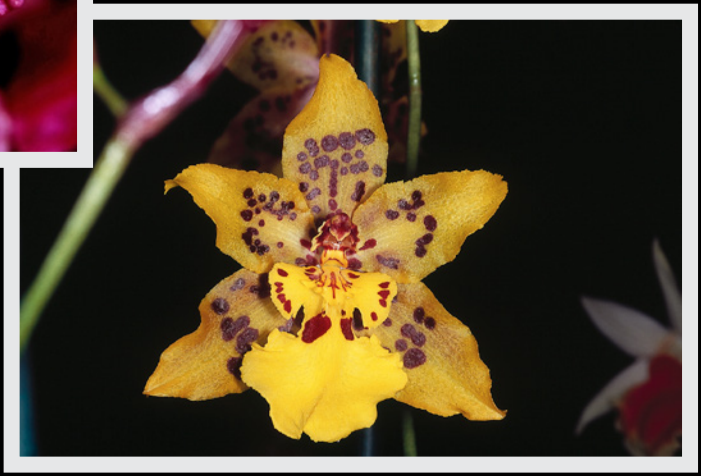
Burrageara Living Fire

Photo by Steven A. Frowine



Rodricidium Orchidom Dancer

Photo by Steven A. Frowine



Oncidium Tiger Crow 'Golden Girl' HCC/AOS

Photo by Steven A. Frowine

You can choose from more than 1,000 dendrobiums and even more hybrids in this diverse orchid group.

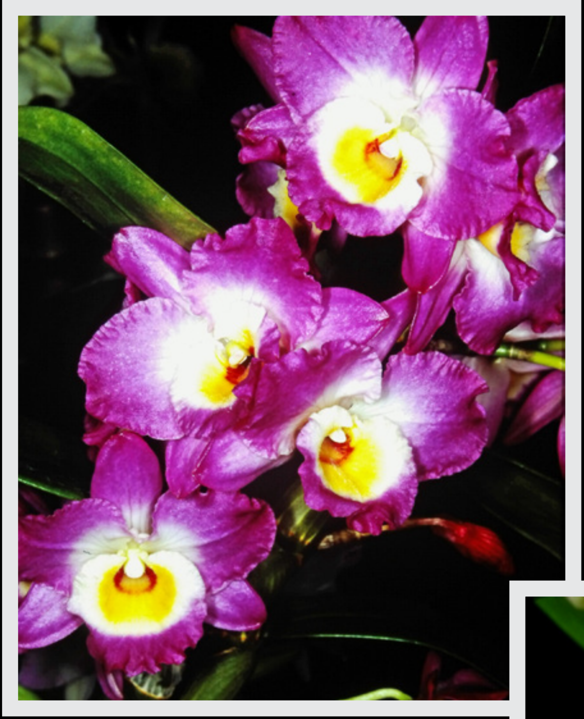


Photo by Steven A. Frowine

***Dendrobium* Comet King**

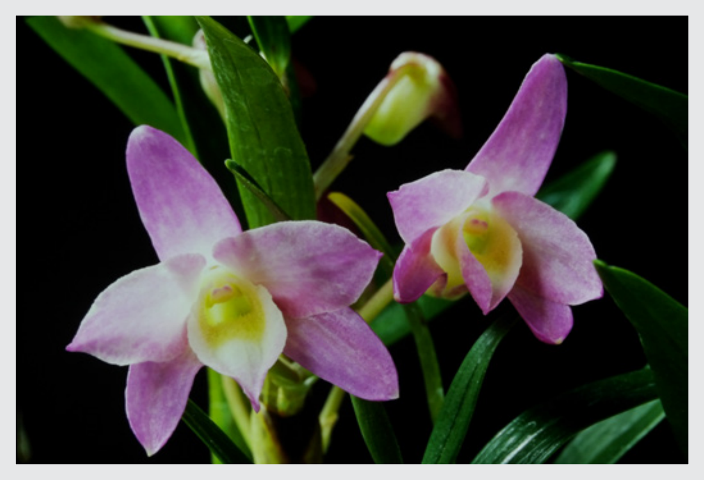


Photo by Steven A. Frowine

***Dendrobium* Nalene Bui**

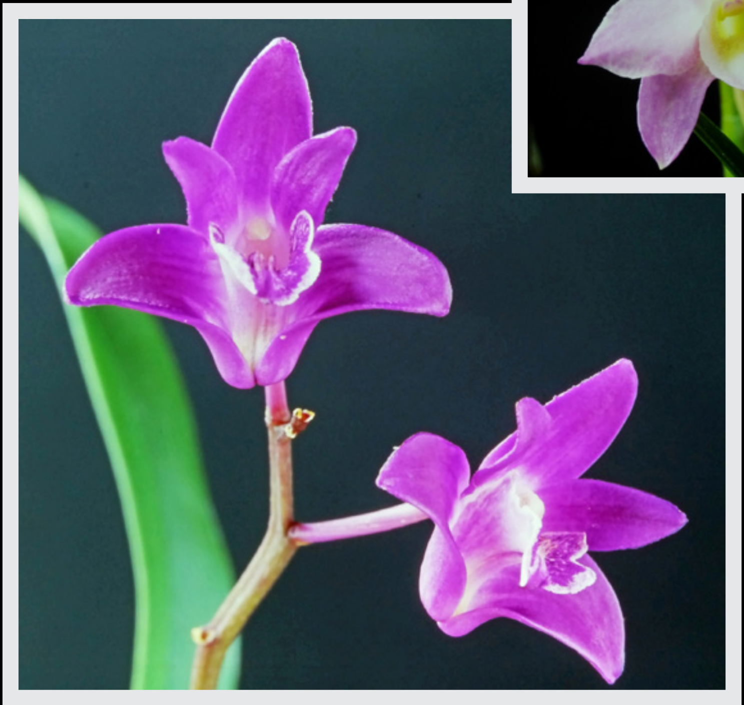


Photo by Steven A. Frowine

Dendrobium kingianum

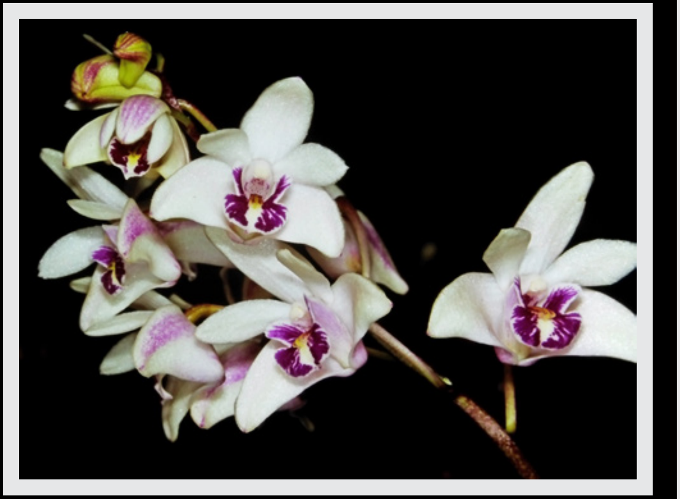


Photo by Steven A. Frowine

Dendrobium specio-kingianum

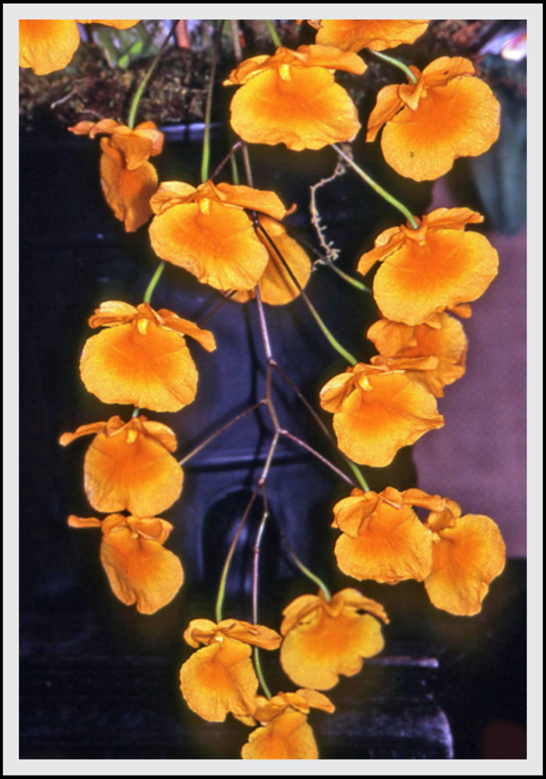


Photo by Steven A. Frowine

Dendrobium lindleyi

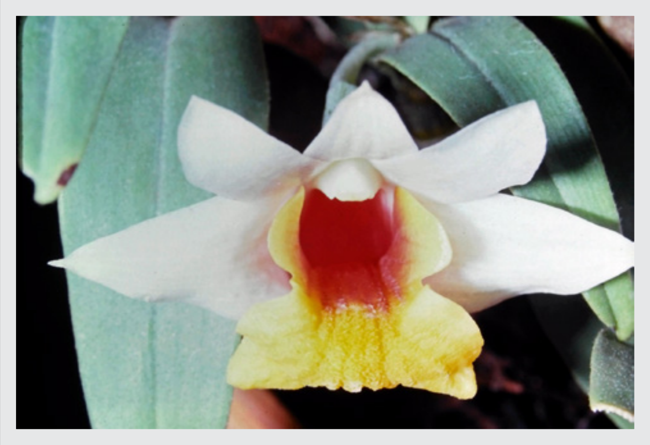


Photo by Steven A. Frowine

Dendrobium bellatulum

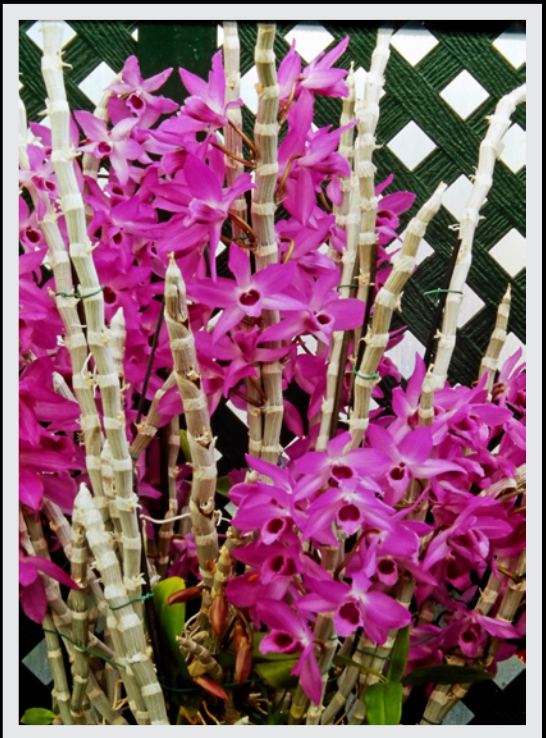


Photo by Steven A. Frowine

Dendrobium parishii

Photo by Steven A. Frowine

Dendrobium unicum

Photo by Steven A. Frowine

***Dendrobium* Iki**

Photo by Steven A. Frowine

Bulbophyllum annandalei

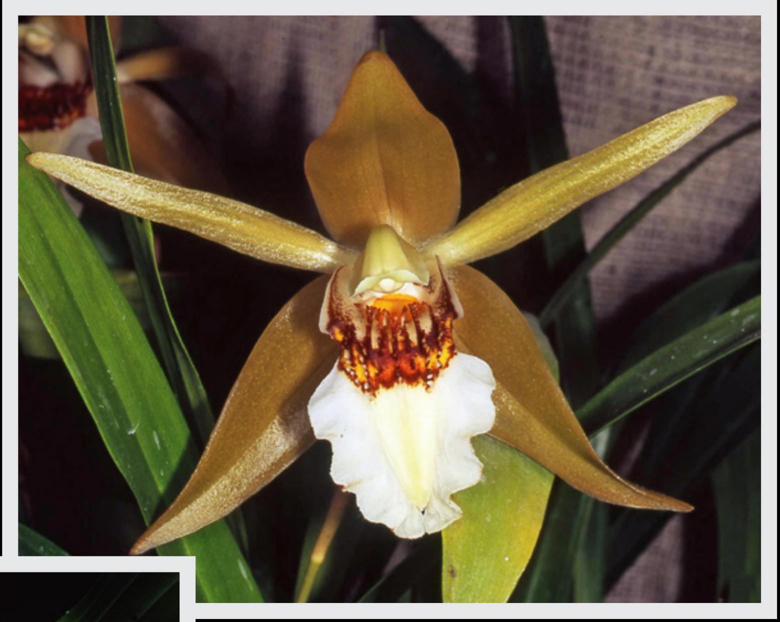


Photo by Steven A. Frowine

Coelogyne lawrenceana

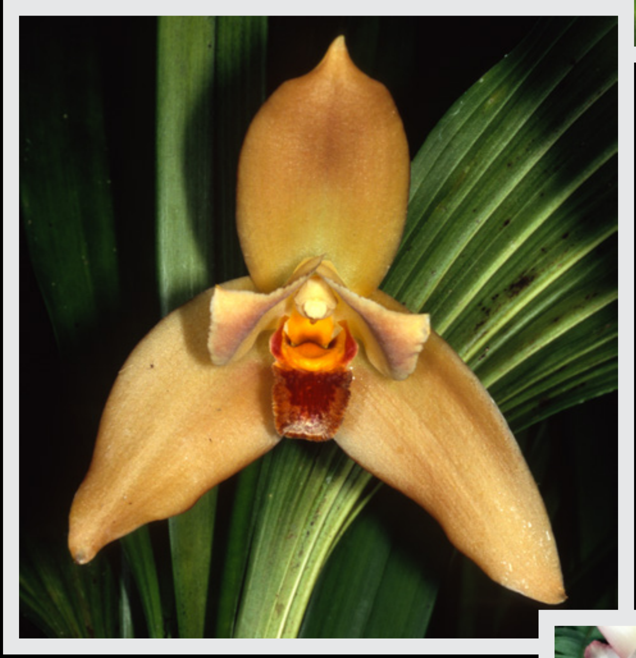


Photo by Steven A. Frowine

Lycamerlycaste Aquila 'Détente' FCC/AOS

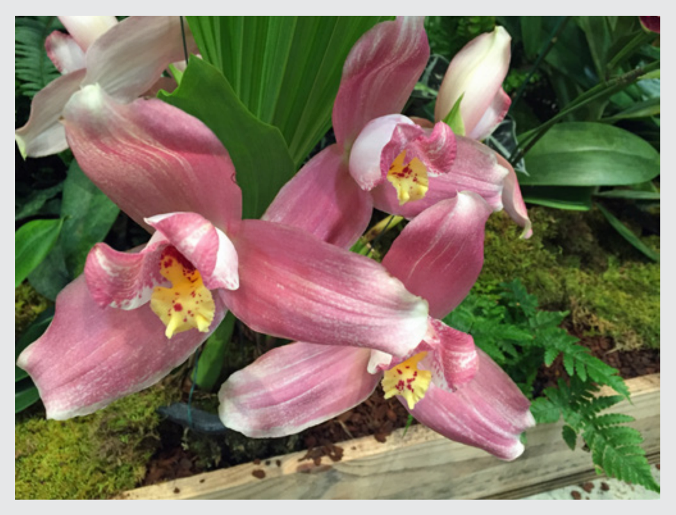
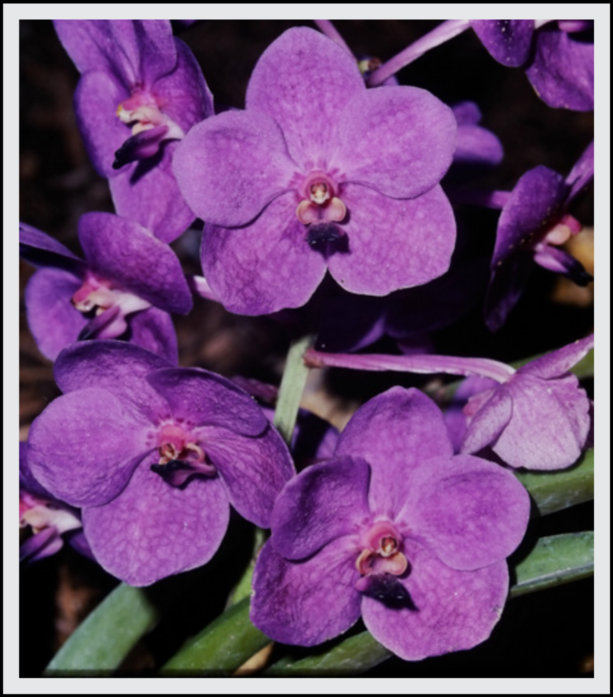


Photo by Steven A. Frowine

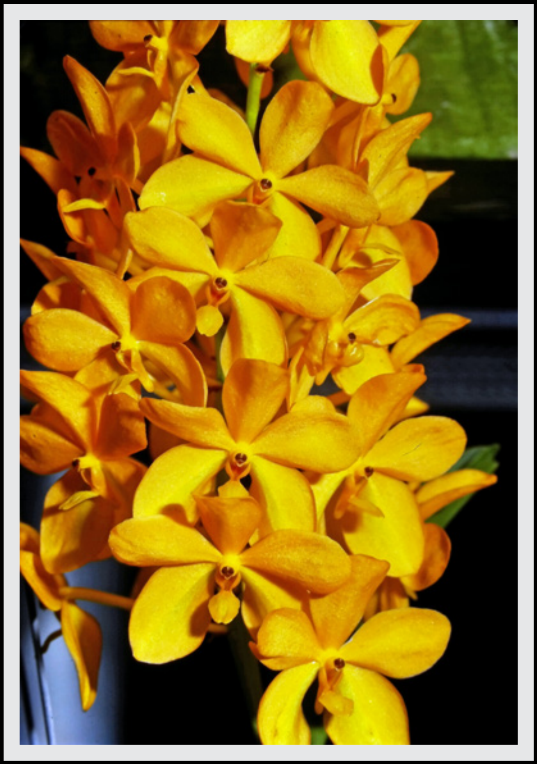
Lycaste Koolena

Photo by Steven A. Frowine



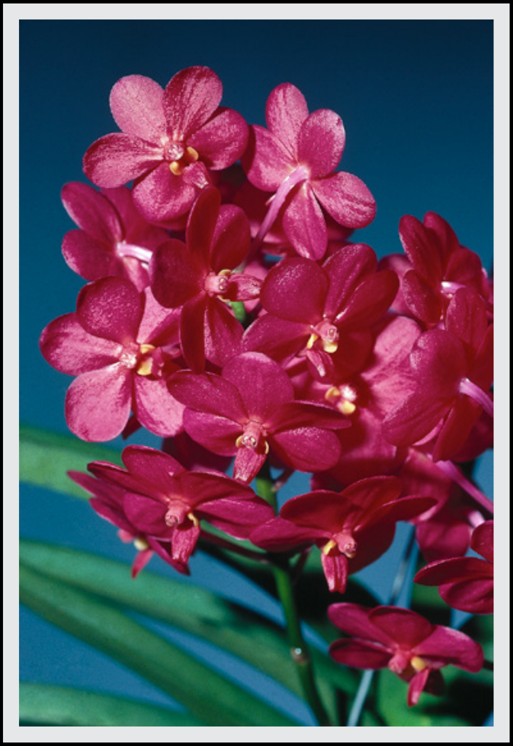
Vanda Suk Samran Beauty

Photo by Steven A. Frowine



Vanda Sagarik 'Rapee'

Photo by Steven A. Frowine



Vanda Peggy Foo

Vandas, a favorite flower for Hawaiian leis, come in almost all colors (see Chapter 14 for more information).

Vandachostylis Charm
'Blue Star'

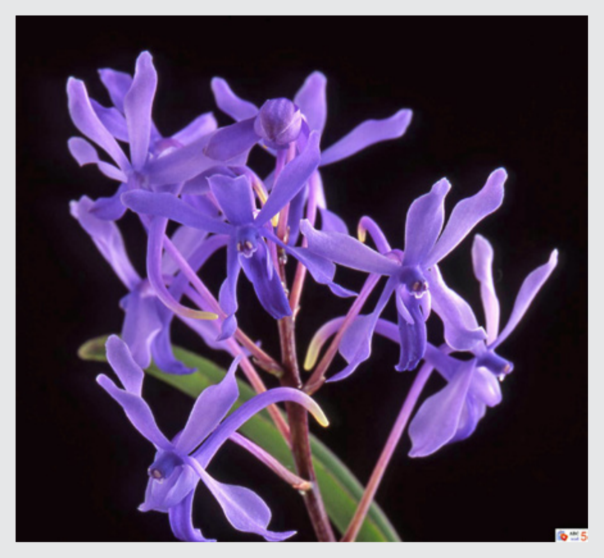


Photo by Steven A. Frowine

Hardy lady slippers thrive in cold climates. Refer to Chapter 15 for more hardy lady slippers.

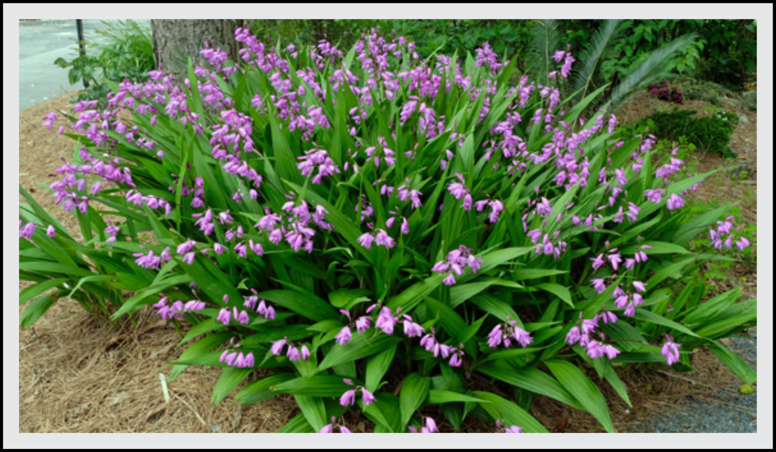


Photo courtesy of Plant Delights Nursery

Bletilla striata

Bletilla ochracea

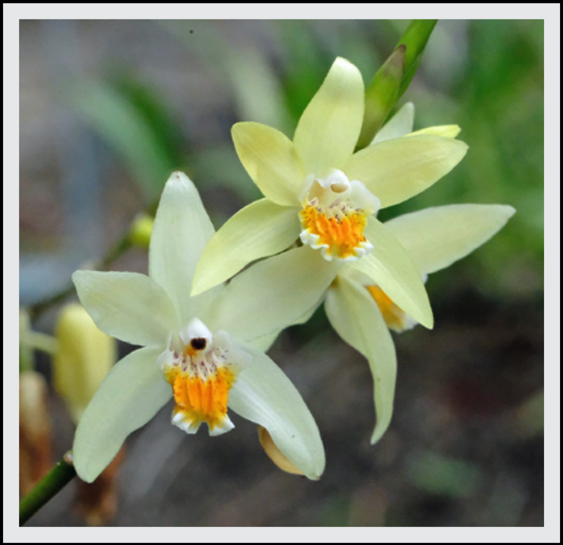


Photo courtesy of Plant Delights Nursery

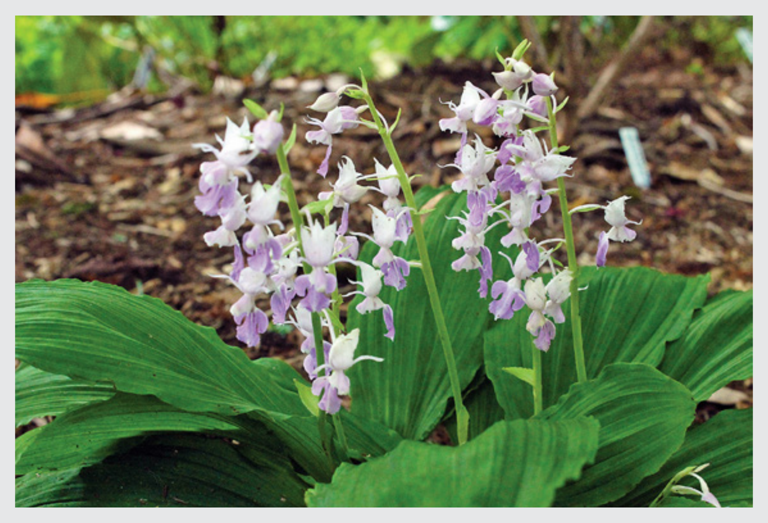


Photo courtesy of Plant Delights Nursery

Calanthe reflexa

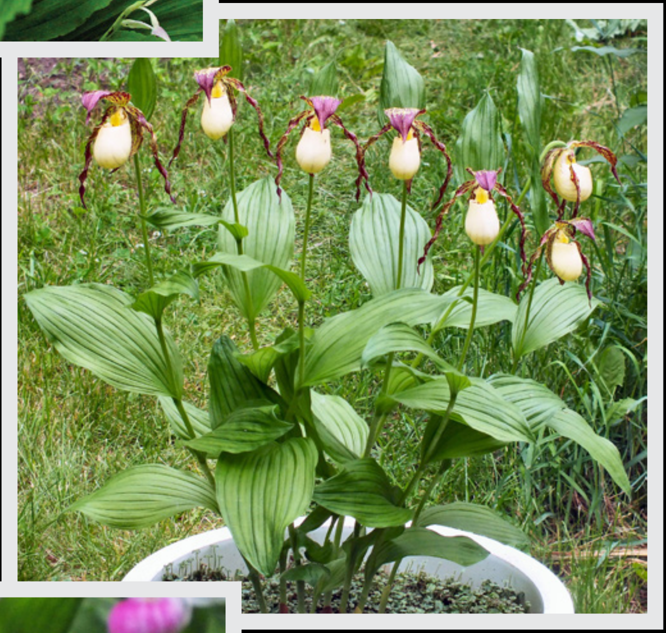


Photo courtesy of Spangle Creek Labs

Cypripedium kentuckiense

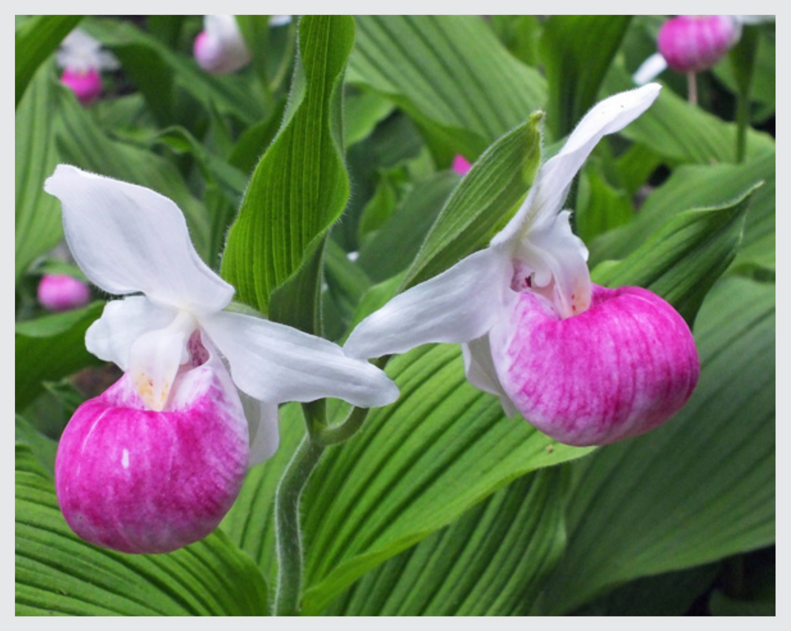


Photo courtesy of Spangle Creek Labs

Cypripedium reginae

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